

# THE COAST ARTILLERY JOURNAL

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MAJ. STEWART S. GIFFIN, C. A. C. .... *Editor*

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*Authors alone are responsible for statements in contributed articles*

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The record of General Summerall epitomizes the elements of the highest form of leadership. During his tour as Chief of Staff he has not been an Infantryman, a Field Artilleryman, a Coast Artilleryman, or a Cavalryman. He has been a soldier who realized that the military team is composed of the several arms, each an important part of the whole. Without failing to realize the possibilities of new weapons and developments he has refused to be stampeded into the abandonment of principles which are fundamental. If only one word were permitted to summarize his character the word "Staunchness" would be that word.

The Coast Artillery Corps will miss General Summerall. It desires to express its appreciation of his leadership and to offer its congratulations upon the completion of an active military career which will serve as an example for years far in the future.

# THE COAST ARTILLERY JOURNAL

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## Industrial Mobilization

*By* COL. FREDERICK H. PAYNE, the Assistant Secretary of War

WE ARE living in an industrial age, and fighting forces have come to depend in a high degree upon the intricate weapons, machines, ammunition, chemicals and other supplies that industry alone can produce. A nation cannot afford to face a major emergency today unless its industrial facilities and material assets are capable of meeting promptly the great additional demands that will be made upon them in war.

Prior to 1914 there was no universal appreciation of the great influence that industrial and economic factors would exert in a modern conflict. Even after watching the progress of the war in Europe for two and one-half years, we, in this country, did not visualize clearly the difficulties we would encounter in procuring munitions—nor were we prepared to carry out the Army's necessary functions with respect to such procurement. We clung too closely to the conception of warfare as purely a struggle between armed forces in the field, and did not think of it as a contest in which all the mental, moral, and material resources of each opponent would be involved. Although we insisted upon proper organization and unity of command so far as the military forces were concerned, we had not foreseen the necessity of providing for a national organization of our industrial activities.

When the United States entered the World War it was the greatest industrial nation of the world. We apparently assumed that the mere existence of numerous industrial establishments, and the possession of great natural resources were in themselves sufficient guarantee of prompt production of the munitions we would need. Our experience in 1917 was disillusioning. Able to make only vague estimates as to our requirements in munitions, we could not formulate a coordinated production objective. Work was started on many items of little importance. Contracts were placed for others far in excess of immediate requirements. Certain essential items whose production would necessarily consume much time were initially neglected. Lack of centralized control over governmental procurement agencies encouraged competition among them, and prices for commodities and services rapidly began to soar. The Government spent many millions purchasing articles at unreasonable prices resulting from its own lack of foresight. There was much useless duplication and interference which seriously handicapped production. Our delay in setting up in



the Federal Government an organization to direct and control the Nation's industry prevented the initiation of constructive and corrective policies until the last few months of the war. This added to the difficulties, which even under the best of conditions, were bound to exist. Recurrence of these mistakes under different international circumstances might jeopardize the very existence of this Nation.

This expensive lesson taught us that if the country is to be ready to meet the test of war, preparation in the industrial field must go hand in hand with purely military preparation. We learned from the World War experiences of many nations that necessary munitions must be procured promptly without occasioning great disturbances in the normal economic life of the country. Violent readjustments cause confusion and uncertainty, and consume time. Serious lowering of the living standard, wasteful methods in procuring necessary supplies, and rapid and inequitable changes in commodity prices are all damaging to national morale. To avoid these evils during a major emergency requires serious study and careful planning in time of peace.

The pressing need for such study and planning was still fresh in our minds when the National Defense Act was revised in 1920. Section 5a of that act reads in part as follows:

“Hereafter the Assistant Secretary of War \* \* \* shall be charged with supervision of the procurement of all military supplies and other business of the War Department pertaining thereto and the assurance of adequate provision for the mobilization of material and industrial organizations essential to war-time needs. \* \* \*”

During the past ten years, much has been done to carry out the provisions of the passage just quoted. Much still remains to be done—in fact, the task is a continuing one—and for this reason, if for no other, we should all seek to understand the problems that are involved in preparing a plan for industrial mobilization.

These problems are briefly as follows:

1. To devise and have ready for prompt operation the system to be employed in procuring from industry the munitions for the army estimated by the General Staff to be initially necessary.
2. To determine what governmental action will be necessary to insure to industrial establishments the labor, power, money and raw materials essential to the production of commodities needed by combatant forces and the civilian population.
3. To provide for an emergency organization with adequate power to carry adopted plans into effect.

Obviously, the corps of officers working on these problems must be familiar with current industrial practices and conditions. Fortunately, the peace time duties of my office and of army procurement branches furnish experience in these matters. In the process of procuring current sup-

plies, contacts are made with industry and essential information is collected. Moreover, opportunity is afforded to coordinate army purchasing agencies and methods used in peace with the plans proposed for use in the event of war.

The gist of our present plan for the actual procurement of army munitions is simply this—to make in peace a specific arrangement with each concern that must produce an essential item upon the outbreak of war. The whole task is apportioned to the various sections of the country in accordance with productive capacity, and the item assigned each establishment is the one it is best suited to produce. This plan insures an orderly and economic distribution of the initial production load to all parts of the country. It also gives each industrial establishment forewarning of the task the Government will expect it to assume upon the beginning of war, and an opportunity to make some preparation for the accomplishment of the task. In this phase of the work, due in large part to the valuable assistance rendered by individual business men, real progress has been made. Over fourteen thousand plants have made tentative agreements with the Government to begin the production of specific items as quickly as practicable after the receipt of proper notification. If we should face a great emergency tomorrow, we feel reasonably certain that mistakes occasioned in 1917 by our lack of accurate knowledge of military requirements; by the concentration of production tasks in already congested areas; and by unwarranted competition among purchasing agents of the Government, would not be repeated. Ample provision is made to insure that there will be no interference with the arrangements of the Navy for procuring munitions, or with production to meet essential civilian needs.

In working out a munitions procurement program, many details must receive the earnest attention of the planning agencies—and the questions that arise call for teamwork among all concerned. For instance, the Air Corps some time ago drew up specifications for a suitable type of training plane for use in war. Upon investigation the procurement section of the Air Corps found that there was no such machine in commercial production. The using service then made a re-study of its requirements to determine whether, for this purpose, it could not adopt one of the types already in production. This particular question has not been definitely settled, but it illustrates how the procurement and using services work together in the attempt to secure the most efficient results from existing facilities rather than require the manufacturer to consume time in the establishment of new production processes.

When any of the Procurement Services has completed a plan for the procurement of a particular item, it is able to furnish accurate estimates of the speed at which deliveries of the finished product can be made. These estimates are most important, for they serve to show to the Government what amounts of various essential items should be kept in storage to meet

military needs during the period before industry can get into mass production. Proper industrial planning seeks in every possible way to reduce this period of non-productivity, in order that our dependence upon "war reserve munitions" may be substantially decreased. It is for this reason that my office continues to urge the accumulation of tools, gages, dies and fixtures, and the placing of "Educational Orders."

Above all, it must be understood that our procurement plan does not contemplate the purchase or the unnecessary commandeering of existing factories; nor does it provide for any control over industrial facilities by military officials. Responsibility for operation remains with plant executives; any other system would fail to take advantage of their demonstrated efficiency.

So much for the first phase of preparing for industrial mobilization. Right here is the point in war planning where my office would like to stop. Preferably, we would confine our efforts to developing, revising and perfecting the plan briefly outlined above. This, however, we cannot do, as will be disclosed by a further analysis of the problems involved.

Army purchases in the first twelve months of a general mobilization will total approximately ten billion dollars, and speed in delivery will be of the utmost importance. It is apparent that no matter how efficiently such a huge order is distributed to industry, many problems will arise which will be solved satisfactorily only if they have been foreseen and adequate provision made to meet them. The Government cannot afford to place war contracts of this size and then do nothing more than wait for delivery of finished items. We must assure to every essential industrial facility an adequate supply of raw materials, transportation, labor, power, and money.

In considering these matters we are dealing with problems much broader in scope than the mere making of specific plans with industrial establishments for the delivery of finished items. We must now estimate the effect of emergency demands on the normal business processes of the Nation and must develop plans to meet the situation thus created.

Studies of the factors that will have an important bearing on our industrial effort in war have been progressing for the past ten years and much essential information has been accumulated. Some of these studies deal with raw materials. In many cases there would be no difficulty in procuring them because of our wealth of natural resources, but over twenty others, among which are manganese, tin, rubber, and wool, would be extremely difficult to obtain in the necessary quantities should the enemy seriously interfere with our over-seas commerce. Consequently, my office must evolve plans for overcoming or minimizing the effect of such shortages.

Consider for a moment the question of rubber. The United States imports annually from southeast Asia and adjoining islands, about five hun-

dred thousand tons. If our communications with that region were interrupted, we would face a rather formidable problem. To lessen the effects of such a situation we can:

Decrease consumption of rubber, notably on pleasure cars.

Increase the use of reclaimed rubber.

Commandeer all raw rubber in the United States and use it for essential purposes only.

Expand the small rubber industry already operating in southwestern United States.

Encourage the development of synthetic rubber.

Use all possible means to import rubber through neutral countries with which we might be able to maintain communication.

To determine, and to be ready to apply, the best methods of doing all these things require a great amount of study and work on this one commodity alone. Possibly the future may see a great change in our situation with respect to rubber—either through the development of a satisfactory synthetic material—or by developing a producing area in the North American continent. Planning agencies, however, must be ready to meet whatever situation exists—even while they endeavor to remedy that situation.

Again take the case of artillery ammunition—always an important subject. Aside from the many difficulties to be met in the production of all the component parts of the shell, there remains the problem of loading. The Ordnance Department, recognizing that there will be a shortage of skilled personnel, considers that the loading plants must be few in number—consequently, each must be large in size; the largest proposed requiring an outlay of over one hundred and fifty million dollars for its construction. In the interests of safety, loading plants must be located far from population centers. The proposed solution consequently would require the concentration at isolated spots of large quantities of material and large numbers of workmen. This in turn demands a great deal of construction to shelter and care for the personnel. If possible these things should be avoided, but if we establish a great number of small plants over the country we shall lack the key men necessary to run them. The most efficient mean between the two extremes can be found only through prolonged study of all reasonable expedients.

Another interesting subject under this general heading is that of devising a plan for the control of prices. Existing literature, setting forth the World War experience of England, Russia, the United States and other countries in this field, is enlightening. If prices can be controlled and adjusted properly to changing conditions, the problem of distributing equitably the economic burdens of war to all classes of citizens is almost completely solved.

Conflicting opinions as to the function of government in this matter are freely expressed. On the one side we hear "Prices must be permitted to go where they will, and excess profits must be taken into the national treasury through graduated income taxes." The proponents of this idea hold that any other system will conflict with the "fundamental law of supply and demand"—and this they maintain is a complete answer within itself. Such generalizations are easy to make and this particular one offers no solution to the problem, as the history of several of the great nations in the World War amply proves.

As the other extreme there has been proposed often the idea that the Government should "draft everything and everybody." If this proposition is to be taken literally, it certainly constitutes a rather large order. It is evident that many intricate and perplexing administrative details would accompany any attempt to incorporate every person and every material thing in this country into one rigidly controlled unit. The time required to put such an organization on a working basis renders it, in my opinion, an impracticable solution to this problem. The result we are seeking is efficiency in the conduct of war, and the equitable distribution of war's economic burdens. None should profit through the sacrifice of others, and if this is to be accomplished while the nation is moving swiftly to develop its full power against the enemy, the scheme adopted must be simple, sound and workable.

Simplicity demands that any plan affecting control of prices be based on peace time customs and methods—and must be made effective by the support of public opinion, by governmental regulations, and the control exercised by the government over raw materials, transportation, and other essential elements of production.

Space does not permit me to discuss any of these subjects at length nor to describe the studies made concerning raw materials, labor, finances, power, transportation and other essentials. I mention them to indicate the scope of the investigations that are necessary to a satisfactory solution of our second big problem in planning for industrial mobilization.

It is apparent that if the central government is to exercise all these unaccustomed controls in time of war, there must be ready a plan for setting up the machinery for the performance of this function. *This, the third main problem*, is well set forth in the following quotation from a paper prepared in the War Department General Staff:

"A Government at war is now confronted not only with a military problem, but with an industrial problem of a nature wholly different from that confronting it in peace. Indeed its attitude toward industry is largely reversed—from one of reliance upon private initiative it becomes one of extreme paternalism. For in peace the commercial and industrial activities of the nation flow from the working of the economic law of supply and demand, with a minimum of interference by governmental regulation. In

war this law must be displaced in a large measure by that of military exigency. Some activities take on a much greater importance than others; so some must be expanded, others curtailed, and still others set in entirely new directions, and many must be re-grouped in new relationships. The impulse for this and the subsequent guidance and control of the national activities in their new channels and new relationships, must come from the central Government, which alone can determine how the exigency can best be met. This necessarily entails material changes in the administrative machinery of the Government."

If reorganization is not foreseen and planned for, it will cause confusion, uncertainty and delay. In this connection I quote from a letter written in 1924 by President Hoover:

"While I have the impression that in case of another war, some years hence, the conditions surrounding it might require a set-up apropos to its nature, on the other hand, greater preparedness in administrative organization would have prevented many losses and much confusion which occurred during the early stages of the last war owing to the time required to develop adequate administration. The conditions then were unprecedented, and organization had to a considerable degree to be developed by experience."

The task of devising a suitable governmental organization for war is not solely the duty of any particular agency of the Government. Furthermore, no arbitrary decisions from any authority can secure the results we are seeking. To be of value, the basic scheme for organization must be a natural and logical development so that it may serve as the continuing outline into which can be fitted subsidiary plans as they are prepared. It will endure only if its essential features receive the approval of all interested agencies, including industry itself. Otherwise, changes in personnel will result in the scrapping or revising from time to time of the basic provisions of the plan, and progress in the development of essential details would cease.

My office is endeavoring to contribute its proper share toward providing for a great war organization appropriate to this country. Our duty in this particular problem is to devise a governmental headquarters for industrial control—other matters are considered only to determine the relationship that should exist between the industrial and other essential parts of the whole war organization. To quote from the Handbook for the War Department General Staff: "There are certain other superagencies of the business of war that existed in the last war and must exist again in the next. \* \* \* The Assistant Secretary of War cannot give assurance of adequate provision for industrial mobilization unless he plans for the recreation of these agencies." Fortunately, we have as a guide the experience of our own and other countries in the World War, and the assistance of men who held key positions in similar organizations in that conflict.

Naturally, the personnel in the proposed organization must be experienced in those activities with which they will be expected to deal. Manufacturers, financiers, agriculturists, engineers and other professional men, representatives of labor, of transportation systems, and so on will be included in the membership of such a body. Exactly how it will be organized for the performance of its many functions will depend to a great degree upon the habits and personality of the war time President.

Briefly, the plan my office has proposed visualizes the President exercising his war powers with respect to industry through an Administrator of National Resources, an Administrator of Man Power, and two or three other direct assistants, depending upon the exact formation the President chooses to adopt. To provide the necessary flexibility the plan for each essential part of the organization is built up, as far as practicable, as a unit. This applies particularly to plans for organizations that will control war trade, shipping, fuel, food, marine insurance, and financing. Thus, no matter what the eventual grouping by the President, the preliminary studies, made in peace, will be valuable to him and his assistants.

The suggestion is often made that we should seek legislation from Congress to provide definite answers to many of these questions. With this idea I do not agree because such legislation would make plans inflexible, and difficult of revision. All plans dealing with the policies this government will pursue in the event of war must be kept up to date, if they are to be of value in an emergency. In my opinion, the War Department policy of keeping on hand drafts of bills for the President to present promptly to Congress in emergency is perfectly sound. This policy contemplates that the President, Congressional Committees and industry shall be kept informed of the contents of all such drafts, and their approval of them secured. Thus, in an emergency Congress will be in position to enact well-thought-out legislation promptly without consuming time in framing bills, holding hearings, etc.

There is one aspect of national preparation for war to which I invite your particular attention. Two kinds of preparation for war are essential—military and industrial, each vitally important. We have never had the opportunity or the money to make the complete preparations that we consider necessary. This applies particularly to the purely military aspects of the problem carried out under the direction of the Chief of Staff. This restriction is to be regretted—and we can only hope that it will not at some future date result seriously for the country. On the industrial side, however, much of the preparatory work can be accomplished with the expenditure of relatively small amounts of money. The mines, the farms, the power and transportation systems, the manufacturing plants, and the trained personnel that will produce our war munitions already exist. This part of the problem involves principally study, thought and the development of plans for the proper use of these things. To the end that every

constructive step possible may be taken, it behooves all of us to consider the problem seriously and to contribute whatever we may to its complete solution.

Of course, if war should be declared, trained officers will seek assignments to field duty, just as soldiers have always done under similar circumstances. By inclination and by training their interest will be in front of the Army's base depots, rather than in rear of them. When Congress in 1920 relieved the General Staff of the duty of supervising Army procurement and of planning for industrial mobilization, it appreciated the necessity of assigning these particular tasks to a separate group of well-trained specialists. That law fixes the peace time responsibilities of the industrial staff as definitely as it does those of the General Staff. The major problems awaiting solution by each of these groups are of great importance, and neither group should be allowed to jeopardize success through devoting time and effort to inconsequential administrative details arising in the War Department. Each staff should bear in mind its own war mission. Cooperation and mutual assistance between the two should be automatic, but interference by either with the legitimate functions of the other should never occur. Thus, all of us will be enabled to devote our attention, if not exclusively, at least principally, to the same type of duties that we will probably be called upon to perform in the event of war.

In conclusion, I desire to emphasize a few salient points. In war the business of armies and navies is to fight—the business of industry is to give them the things with which to fight, and to provide the essentials for civilian consumption. Combatant forces and industry may be termed the national war-making team and each group must be ready to function promptly under its own selected leaders in the event of a major emergency.

In my office we are developing two plans, each coordinated with the other, but each prepared for a distinct purpose. One is a basic plan for industrial mobilization, designed to facilitate the efforts of industrial leaders when they are called upon to assist the President in directing our industrial effort in war. The other sets forth the process through which munitions will be procured by Army purchasing agents. This second plan, in the event of war will be executed by the procurement services of the Army, which, under the supervision of the Assistant Secretary of War, will form the connecting link between industry and the Army's combatant units. Plans for the efficient performance of this duty, while primarily of interest to procurement personnel, should also attract the study and comment of industrialists and of trained military leaders.



# Future Coast Artillery

*By* MAJ. SANDERFORD JARMAN, C. A. C.

**I**N THE Coast Artillery today we find two schools of thought in regard to our line of development. There are those that believe that the seacoast artillery phase should receive paramount consideration—others that feel that antiaircraft artillery should have major consideration. Just what per cent of the personnel in the Corps is on each side of this question cannot be estimated but that there is a division there is no doubt. It is my belief that this division is due to the fact that quite a percentage of the personnel is unfamiliar with the technique of antiaircraft artillery. In the development of the materiel and the fire control methods of antiaircraft artillery there has been a timidity on the part of some officers—for the most part the older ones—to delve into the supposed mysteries of three dimensional gunnery. In reality the application of gunnery principles has been made so mechanical and simple in the new type of equipment as to make the actual firing problem much simpler than the one presented in seacoast firing. The average Coast Artilleryman has for years been working with many kinds of gadgets in the seacoast artillery fire control. These gadgets are of such a nature that it is necessary for officers to know the whys and wherefores of each particular one in order that they may instruct and train the enlisted personnel as to their operation. In fact, in many instances, the operating enlisted personnel have to use their own individual judgment in operating them. This is not true in the latest antiaircraft fire control, for all that is necessary is that the personnel, for the most part, be able to match pointers and load ammunition into the gun. Instead of each officer having his own pet mechanical device for solving the problems that he would ordinarily encounter on firing a seacoast battery, there is now provided a super-computing machine. This machine takes the many ballistic variables and solves them accurately and instantaneously. Not only does it do this but it transmits the solution to the gun in the form of a final elevation, direction and fuze setting. This means that the Coast Artilleryman has grown away from the semi-automatic fire control system for the two-dimensional problem of seacoast artillery and advanced to the full automatic system for the three-dimensional problem of antiaircraft artillery. The human equation (personnel errors) has in so far as the enlisted personnel is concerned, been eliminated to a great extent in the new antiaircraft fire control equipment.

The semi-automatic fire control that was developed for the war-time antiaircraft artillery finds its prototype in the present standard seacoast artillery fire control equipment. It is interesting to note, though, that with this war-time equipment one-fifth of all enemy airplanes brought down were accredited to the antiaircraft artilleryman. As soon as there had been time for studying the lessons of the war the Coast Artilleryman realized

that the antiaircraft artillery in the next war must be had in large quantities of greatly improved design. With the predilection that Coast Artilleryman has for evolving instruments that will solve mathematical problems, coupled with the fact that the design engineers of the Ordnance Department have had for the most part their early training in the Coast Artillery, the problem of solving the three-dimensional problem was confidently undertaken by all concerned. The results can best be realized when the following comparison between the war-time equipment and the latest type of antiaircraft artillery is considered.

	<i>Antiaircraft Guns</i>		<i>Machine Guns</i>	
			<i>Old .30 cal.</i>	<i>New .50 cal.</i>
Muzzle velocity .....	1800	2614		
Max. vertical range, yards.....	8250	8700	4000	5000
Max. horizontal range, yards	14000	15400	6000	7500
Rate of fire .....	15	25	550	600

In considering the development of fire control for antiaircraft artillery it is noteworthy that the production of the latest antiaircraft director is the result of assigning the late Maj. W. P. Wilson, Ordnance Department, then in the Coast Artillery, to duty at the Bureau of Standards for a four-year period of study of the latest scientific developments with the object of applying this knowledge to solving the fire control problems of the Coast Artillery. The result was the production in 1927 of a director that it is expected with minor changes and improvements will prove far superior to any similar instrument yet produced.

The development of the new antiaircraft director has demonstrated the feasibility of furnishing an instrument based on similar principles but much less complicated for solving the two-dimensional problem of seacoast artillery. Such an instrument and data transmitting devices connected electrically with distant horizontal base stations should be made available for our modern seacoast artillery, consisting of 14-inch railway and 16-inch fixed guns.

The development of the new antiaircraft artillery has in reality simplified the Coast Artilleryman's gunnery problem by making it automatic to a great extent. No Coast Artillery officer should feel any hesitancy in delving into this new problem. The primary requisite for success is to be able to make rapid and faultless decisions, for to bring down the maximum number of enemy planes necessitates officers who are thoroughly alert, capable of sensing where the bursts are in reference to the airplane and then adjusting the fire not on the present position of the plane but where the plane will be a few seconds later.

The new mission of the Coast Artillery as prescribed in a document signed personally by the late Secretary of War, the Honorable J. W. Good, is as follows:

"It must be a normal mission for all Coast Artillery to serve antiaircraft guns. While the fixed defenses constitute the first line of defense for

the harbors on the coast against enemy naval guns, the antiaircraft armament must constitute the first line of ground defense against enemy aircraft at sensitive points and vital areas. This principle will be recognized and taught. In accordance therewith, all Coast Artillery will be trained to serve skillfully, and effectively antiaircraft armament, instruments, equipment, listening devices, searchlights, fire control, etc., in addition to the permanent assignments that units may have to fixed defenses, railway or tractor-drawn artillery."

This mission makes all Coast Artillerymen antiaircraft artillerymen. All can learn to shoot antiaircraft artillery. In the beginning those assigned to seacoast artillery organizations will have to content themselves for some time with the war-time antiaircraft fire control equipment. As has been pointed out this equipment is comparable to the semi-automatic seacoast artillery equipment in that many gadgets are used and final results are dependent upon the proper coordination of a goodly number of instruments and gun pointers. The result will be that each officer will have the advantage of becoming familiar with all stages of the fire control development. Wasn't it during the late war that in the course of a discussion by staff officers as to whether a certain officer was qualified to handle a particular job, the Commander-in-Chief interrupted with the remark, "You had better give it to a Coast Artilleryman for I have never had one fall down on a job yet"? In a like manner the antiaircraft artillery problem will be solved. It was about 1901 that the Coast Artilleryman began to shoot at moving targets. Within five years no one considered that this offered any problem at all. In a like manner five years from now we will find all Coast Artillerymen proficient in handling all phases of antiaircraft artillery. Today we are all thoroughly indoctrinated with the principle that if you are capable of hitting a moving water target there is no use to think of the fixed target problem as it is so simple as to not merit consideration; likewise in a few years the problem of hitting the moving water target will be in the same category as the fixed target of twenty-five years ago. By means of fire control directors and electrical data transmitting systems a battery commander will be so used to promptly adjusting the fire of his antiaircraft guns firing at a target moving one hundred and twenty-five miles per hour that with similar but simpler apparatus the problem of a battleship moving twenty-five or thirty knots will be no problem at all.

In the developing of this entirely new type of ordnance to meet the demands of the antiaircraft artilleryman for a weapon with an all-around traverse and ninety degrees elevation the ordnance design engineers have been faced to investigate entirely new methods of solving the problem. The result will no doubt have far-reaching influence on the general characteristics of all future types of artillery designed to accompany the field army as well as that designed for seacoast artillery purposes. The develop-

ment of aviation is such that just what part it will play in future wars cannot be predicted. Our imaginations, if given free play, can visualize many possibilities. There stands out one fact that must be kept in mind. During any war that we may have it will be necessary to have artillery capable of attacking that element of the enemy forces that is causing the most damage. It may be the enemy infantry, it may be the enemy artillery, and it may be enemy aviation. It is going to be necessary to have every piece of artillery with characteristics such that it can deliver effective fire against any one of these elements. There is no doubt but what aviation has great potential power for inflicting damage on troops in bivouac, marching and in combat. Proper protection must be provided.

The protection of troops of the field army is now provided by assigning to each corps one regiment of antiaircraft artillery consisting of twelve 3-inch antiaircraft guns (three batteries), eighty-six .50 caliber machine guns. In addition each army has one brigade of antiaircraft artillery consisting of three regiments. This provides a total of eighty-four 3-inch guns and five hundred and twenty-six .50 caliber machine guns for an army. These are all an organic part of the corps and the army. There is provided no organic artillery for the division. Based on past experiences, many solutions of map problems and a general inquiry into the possibilities of aviation, it is conceded by everyone that this is insufficient antiaircraft protection for the corps and army under any condition. There should be a strength of approximately two regiments of antiaircraft artillery in each corps if a reasonable defense is to be had. Of course an entire antiaircraft regiment may be attached to the corps from the army but this would provide more antiaircraft machine gun organizations than are necessary and to split the regiment and attach only the guns would be objectionable.

Instead of adding another regiment to the corps organization a more economic solution will be to incorporate as an organic component of each division a battalion consisting of a gun battery, two batteries of .50 caliber machine guns and a platoon of searchlights. A unit such as this will provide within each division means of protecting it against all types of aviation—attack, bombardment and observation. Machine guns will be used to attack all enemy air forces, when within range, and the guns for attacking bombardment and high-flying observation aviation. An enemy before it can hope to operate successfully must have information. This information will in future wars be principally obtained by observation aviation. To prevent this the low-flying observation must be attacked by all weapons capable of firing at the plane—such as machine guns, automatic rifles, rifles and pistols. The .50 caliber antiaircraft machine gun equipped with proper fire control instruments, in the hands of personnel especially trained in firing at low-flying aircraft is the weapon that can oppose such activities most effectively. To prevent observation at high altitudes there must be

available, and a component part of the division, antiaircraft guns. By the prompt attack and destruction of the enemy observation aviation not only will the enemy be prevented from obtaining information as to strength, composition and movement, but the enemy artillery will be made much less effective.

The size of the corps is such as to make it necessary to employ the present corps antiaircraft artillery for a reasonable defense of the elements of the corps without attempting to assign any to the divisions. In any war of movement the size of the corps is such as to indicate many situations in which the corps acts more or less independently. In all such actions there is a lack of adequate antiaircraft artillery protection. By assigning the suggested antiaircraft battalion as an organic part of the division the total amount of antiaircraft artillery provided in a corps of three divisions will be the equivalent of two antiaircraft regiments plus two batteries of machine guns. As the size of the corps increases or decreases the elements of antiaircraft artillery with the corps will increase or decrease in about the proper proportion.

If it were believed practicable for the corps to coordinate its entire antiaircraft defense in any future war there might be some reason to assigning all antiaircraft artillery as organic corps artillery and making attachments to the divisions as the situation demands, but such coordination is not practicable. Since the only types of action where such coordination is possible is when the divisions, corps troops and their establishments are assembled in a comparatively small area; and since this situation precludes to a great extent a war of movement it appears unsound to base the organization on such premises. The dispersion of the elements of the divisions of a corps make it necessary under the present organization to attach to the divisions detachments from the corps antiaircraft regiment consisting of guns, machine guns, and searchlights with many attending problems of logistics as well as tactics to be overcome. Each division must have as an organic component an antiaircraft organization made up of guns and machine guns if there is to be provided any defense against attacks from the air. It must be remembered that the development of mechanical transport—fast tanks, armored cars, aviation, motorized and portee artillery—will give opportunities of executing swift turning movements. New methods of warfare based on the great mobility of the gasoline motor will be evolved.

When one begins to contemplate future developments in the agencies that are used in warfare there is brought to mind the *ideal* divisional artillery. A consideration of this *ideal* indicates that such an antiaircraft organization as proposed for assignment to each division would not be of such importance if the organic divisional artillery had the *ideal* characteristics recommended by the Caliber Board at the close of the World War. This Board recommended that the divisional artillery consist of two regi-

ments of 75-mm. guns and one regiment of 105-mm. howitzers. Each caliber to have a 360 degree arc of fire and an elevation of from 0 to 90 degrees. If guns of these basic characteristics were provided, and, in addition fire control apparatus were furnished permitting them being effectively fired against bombardment and observation aviation, then artillery would be capable of fulfilling its great primary mission of attacking that element of the enemy that is inflicting maximum losses on friendly infantry, no matter whether that element be enemy infantry, small arms fire, artillery fire or bombardment aviation. There is no doubt but that in future warfare enemy aviation will cause such tremendous losses at times that all artillery without exception must be concentrated on it.

In providing antiaircraft artillery, properly organized and assigned organically to the division as well as the corps and the army, then would a counter weapon for aviation be secured. So much for the field army troops—now what is being done along this line for coast defense? Following the same line of reasoning, should there not be developed and available in reasonable quantities a weapon that can be fired effectively at either a fast-moving destroyer or bombardment aviation? Just as we can visualize actions in the field army wherein every weapon may have to be employed against aviation so can we foresee the necessity for mobile rapid fire seacoast armament being used against bombardment aviation. Today we have no such weapons. There has been developed a 105-mm. .60 caliber anti-aircraft gun. Why shouldn't this weapon be mounted on a mobile carriage so as to permit it to retain its present antiaircraft characteristics and at the same time capable of firing against naval targets. It would seem practicable to so provide for the modification of the existing antiaircraft director fire control system as to enable these guns to fire against water targets. It is interesting to stop and contemplate the fire power of a battery of four of these guns. With a 3000-foot second .60 caliber weapon having a horizontal range of over twenty thousand yards and capable of firing fifteen rounds of ammunition per minute some idea of its potentialities can be visualized, especially as with director fire control and stereoscopic spotting instruments, there should be no difficulty of adjusting fire. Again consider how easy it will be to have a battery change targets. The providing of such a weapon would no doubt find a demand for its assignment in the corps and army artillery organizations. In the corps and army it would be especially valuable for long range interdiction and when the occasion demanded it would be able to render yeoman service in attacking bombardment aviation.

In a short time the personnel of the Coast Artillery Corps, with its ability to meet new conditions, will soon master the problems resulting from our new mission. It will not be long before antiaircraft artillery methods of firing will begin to be applied to our seacoast artillery problems. Improvements in all types of artillery and their employment whether

with a division, corps, army or a harbor defense will follow as a natural consequence of the anti-aircraft development. The broadening of the scope of the Coast Artilleryman will unite the two schools of thought as soon as they realize that each has the same basic problem for solution, i. e., bringing a projectile and a target together irrespective of whether the target is moving thirty-five or one hundred and thirty-five miles per hour. In the end what is the difference between the field artilleryman's, the Coast Artilleryman's and the anti-aircraft artilleryman's problem?

*One of the problems with which we must all be concerned is the continuous depletion in strength of the Reserve Corps. On June 30, last, the number of reserve officers on the active list—not members of the National Guard—totalled about 80,000. We may expect this figure to be further reduced by the end of 1931 to less than 70,000 unless we find some means of checking the excessive losses among junior officers.—*  
From an address by The Assistant Secretary of War,  
Col. F. C. Payne, at Toledo, Ohio.

# Maintenance and Operations of Regimental Motor Transportation

*By* MAJ. G. B. ROBISON, C. A. C.

IT would be rash to attempt to formulate in print a specific system for the maintenance and operation of regimental motor transportation in general. The conditions are so varied as to locality; regimental organization and missions; number, age and type of vehicles; garage and repair facilities, as to pass beyond the experience of one person. Since information as to the features of systems employed by other regiments in the Coast Artillery and other arms is of interest to me, the purpose of this article is to describe a system which, established by Lieut. Col. James B. Taylor, commanding the 69th Coast Artillery (AA), now at Aberdeen Proving Grounds, Maryland, has been successful and satisfactory under existing conditions. The more important of these conditions are the recent organization of the regiment on February 1, 1930; the large percentage of Class B Liberty trucks; and garrison operation.

Let us first consider the things which a regimental commander presumably desires of his transportation. From his viewpoint it would at least approach the ideal if—

All vehicles were able to move under their own power at all times.

All vehicles presented an appearance as to paint, cleanliness, and lubrication, at all times, such as would merit praise from an inspector.

Equipment such as tools, lights, horns, and fire extinguishers were in proper condition at all times.

Each vehicle had at least two reliable and well-trained drivers.

Gasoline and oil consumptions per mile showed a high degree of efficiency.

There was no evidence of needless operation, such as trips by trucks of four batteries to the commissary at the same time when each one would have less than a quarter load.

The man hours of maintenance to obtain the above results were zero.

But since vehicles become dirty when used and parts become worn; since paint fades, metal oxidizes and dust settles even when they are not used, it is obvious that most of these conditions can not be realized practically. We can then state these conditions in more useful form tentatively as follows:

Vehicles will be operated and maintained in such a way as to reduce to a justifiable minimum (due to wear), the number of out-of-commission vehicle hours.

Vehicles will present an appearance as to paint, cleanliness, and lubrication which is acceptable to the regimental commander.



Equipment and its condition will be acceptable to the regimental commander.

Each vehicle will have at least two reliable and competent drivers.

Gasoline and oil consumptions must show an acceptable degree of efficiency.

There is no evidence of two trips when one would have served as well.

The system of operation and maintenance must be such as to avoid waste of effort and materials.

There are (at least) two methods of assigning the responsibility for meeting these conditions. In the first and, it is believed, more usual case, certain vehicles are assigned to each unit of the regiment and the unit commander is responsible for everything pertaining to them except major mechanical repairs. In the second case, the responsibility is placed solely upon the Transportation officer of the regiment.

Let us now consider the relative merits of these two systems in various aspects, still from the viewpoint of *the Regimental Commander*.

When the responsibility is placed upon the battery commanders, they are not likely to be equally experienced in the care of motor transportation; the transportation sergeants will not possess the same exact degree of competence; the mechanics in the various batteries will vary in number and qualifications. To go no farther into the factors involved—and there are others—it becomes obvious that there will be a tendency for the appearance and mechanical condition of the transportation of the various batteries to vary to a considerable extent. When the responsibility is centralized in one officer, one well qualified to discharge the duties involved may be selected; when assisted by a proper organization to be discussed below, all vehicles will receive an adequate and impartial treatment. The tendency will then be strongly toward a uniform appearance and condition throughout the regiment.

Again, in either system a regimental repair section will probably be maintained for major mechanical repairs. But while the battery commanders will be reluctant to have their best mechanics detailed in a repair section common to all batteries so long as responsibility for vehicle maintenance remains with them, no good reason for this remains when their responsibility does not exist. This permits the organization of the most effective and efficient repair section possible, ready to handle all repairs impartially. It is a first step toward cutting down out-of-commission time.

Centralized organization will make possible the most effective use, in the most skilled hands, of all labor saving devices (such as paint sprayers) and will thereby contribute to the best and most uniform appearance and will reduce waste and lost time.

Much trouble leading to lost vehicle time arises from neglect due to carelessness, ignorance, and lack of proper supervision. Insufficient oil or grease, improper carburetor adjustment, lack of water or failure to

drain in cold weather are only some of the things which can lead to the necessity for major repairs. These causes for repair are hardly justifiable since all or most of them are avoidable. Proper organization, training and supervision will keep vehicles in operating condition and out of the repair shop to a marked degree and will thereby release the time of the section for repairs necessitated by wear. With centralized control, one inspector can do the work of four in battery sections and, since the best man will be used, the results for the entire regiment should be actually superior to those which would otherwise be obtained in the best battery.

Centralized control will free the battery commanders from all duties pertaining directly to transportation. The time thus saved them may be advantageously used in the execution of their other duties. The training and firing schedule of the 69th Coast Artillery has been so heavy, while the officer personnel has been so reduced, that officers with firing batteries would not have had time for an adequate supervision of transportation activities.

One man control makes it possible for the regimental commander to deal with only one officer on transportation matters. That one will be familiar with the transportation of the entire regiment. He can install and maintain a uniform system of records and reports.

The adjustment of all vehicles for their best and most economical performance will be facilitated by such a system since the best men in the regiment may be used for these purposes.

The consideration of other aspects must be delayed until we deal with the viewpoint of *the Battery Commander*. His mental reaction to the proposition as given above is probably to the general effect that it sounds well enough on paper but that he probably wouldn't get the sort of transportation he wanted, when he wanted it, at the proper place if he had to draw it from a pool. He wonders what would happen in emergencies when he needs transportation in a hurry. He concludes that he would rather do the work himself so that his transportation requirements would not have to be filtered through anyone else.

His attitude is of fundamental importance. Transportation is presumably assigned primarily and basically to serve the needs of the organization. There is consequently a fundamental failure whenever serviceable vehicles are not promptly at the place needed, no matter what the time. If the failure is due to the system, that system is bad. For this reason an arrangement must be made which will be as satisfactory to the battery commanders as would be the case under any system. The method used in the 69th Coast Artillery has been for the battery commander to estimate (and later determine by actual experience) his vehicular needs for tactical and emergency use. These cars are then assigned to the exclusive use of his battery. They are driven by his own men. They

are absolutely under his control for use at any hour of the day or night. They are as much his for use as they could be under any system.

The arrangement differs from the usual transfer in that the cars are assigned for use only and no property transfer to the battery commander occurs. The unit commander provides two competent men from his organization for every vehicle assigned to him to act as driver and assistant driver. When selected, these men report to the transportation officer for test and training and may be rejected by him at any time if unsatisfactory, whereupon the battery must furnish another acceptable man in his place. These men must be furnished in any case so that the system described does not involve any unusual demand. The man assigned as driver signs to the transportation officer for the truck and its equipment. Thereafter, until relieved from the assignment, he alone may take the truck out of the motor park and no one else may drive it except the assistant driver in the presence of the regular driver. This completely centralizes the responsibility for each car upon one man. Enough vehicles are assigned to each battery so that there will always be a sufficient number even when some of the drivers are sick or absent for any reason. The two men assigned to each truck are used for maintenance work under the supervision of the transportation officer. Battery details are so arranged to permit at least one of these two men to be present on such afternoons as may be designated by the regimental commander for maintenance. The battery transportation sergeants or their designated understudies report in charge of their respective details to supervise the work of maintenance. The work of all details is supervised by the transportation officer or his designated assistant. The responsibility for training these men as drivers also rests upon him. When the men regularly assigned to vehicles have demonstrated sufficient ability, other men in the regiment are given training as drivers in a similar manner. Drivers and assistant drivers are not expected or permitted to adjust carburetors or make repairs to their vehicles.

The battery commander notifies his own driving personnel as to when and where he desires his vehicles. They may be gotten at any time without going through any formalities. As previously stated, this arrangement smoothly accommodates the tactical and emergency needs of the battery without requiring any more personnel than would be necessary for a decentralized system. Routine hauling of food and other supplies and similar service missions is not done by tactical transportation. The transportation officer is also supply officer and the commanding officer of the headquarters battery in the 69th Coast Artillery. Such vehicles of his as may be necessary, make scheduled trips; are used in common by all batteries; and much wasted truck mileage due to duplication, is avoided. Emergency service trips may be made by tactical trucks.

Since the drivers of tactical trucks are used only on tactical missions

there is nothing to prevent their use in drill after arrival at the drill position any more than in a decentralized system. They are never removed from the control of the battery commander except on certain afternoons which do not conflict with training programs and then only for maintenance which would be essential under the other system.

The vehicles which are in excess of routine garrison needs are also in the custody of the transportation officer. They form a pool which makes it possible to replace at once any tactical vehicle which may require repairs taking more than 24 hours. This permits tactical transportation to be always one hundred per cent effective.

If considered desirable this system can be made to furnish a reduction in overhead in the matter of personnel. There is an appreciable reduction in vehicle use without ever denying service. The operations as conducted at Aberdeen do not provide much if any reduction if personnel aside from freeing the battery commanders of firing batteries from such work (which is notable) because the men who would be used in the other system but who are of inferior qualifications due to lack of experience, are used as assistants and given the training to make them competent. This provides a large reservoir of trained men and will make a change to unit responsibility a simple matter should it ever appear preferable. The reality of the advantages described under the conditions existing at Aberdeen at the present time has been demonstrated to our own satisfaction during the last seven months.

# Men, Money and Mechanical Data Computers

By CAPT. HOMER CASE, C. A. C.

THE determination and application of firing data for pointing a two-gun seacoast battery requires the undivided efforts of one officer and twenty-six enlisted men operating nine instruments.\* This number does not include the battery commander's observer, the operator adjusting fire or the members of the spotting section, which would add nine men and four instruments to the tabulation. Telephones are not listed as instruments.

In computing and setting these data every thirty seconds or oftener complicated numbers are transmitted by voice or telephone at least eight times. In the transmission of this data and the operation of instruments there are at least twenty-seven different opportunities for mistakes (personnel errors). Which sets up the following problem in probability:

For each salvo there are twenty-seven independent opportunities for mistakes by personnel. Assume that the probability of each separate mistake is 1 in 100 (0.01). What is the probability that twelve salvos will be fired without erroneous data on any salvo?

A solution shows the answer to be 0.0385, or that for every hundred such practices fired but four will be without error. The probability of 0.01 taken for each mistake is merely a guess. Some mistakes practically never happen, while some are quite frequent. The answer has little significance as such, but the statement of the problem shows the great difficulties encountered in keeping correct data going to the guns. Target practice reports show many personnel errors, but many go undiscovered or by some legerdemain appear as "armament errors." That so many successful practices are fired speaks highly of the training of personnel. But the use of partially trained men amid the confusion and casualties of battle would make certain grave and serious errors.

For anti-aircraft artillery necessity was the mother of mechanical data computers. The high speed and comparatively short ranges of the targets makes the angular velocities so great that the time between observation and firing must be as small as possible. In newer directors this time has been reduced to one second. One officer and a dozen men track the target in its three dimensional flight and keep a stream of the three elements of firing data going to the guns. To make this possible millions of dollars have been spent and the instruments developed have few rivals as marvels of complicated ingenuity.

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\* Coast Artillery Field Manual, Vol. 1, Sec. XVIII.

The call for a seacoast director for our larger caliber batteries has primarily arisen from the fact that our present system of data computation does not combine speed and flexibility. The final cost of the director system has been little mentioned. The usual feeling is that such a system is necessary even if very expensive. There is no doubt but that the first or capital costs would be considerable, but it seems equally certain that the operation and maintenance costs would be enough lower to amortize the capital and pay the interest costs. Mr. Ford did not hesitate to scrap millions in machinery to tool his plants for the production of a new model. More modern equipment in our batteries should give more hits per gun per minute at a cost even less than that of the system it would replace.

Firing by Case III is almost universal in our service, but this method lacks flexibility in speed and introduces considerable dispersion in direction. Firing bells are timed to correspond with the speed of well-trained gun crews for short practices. If this time is exceeded by one second the gun must stand by until the next bell rings. Thus a well-trained battery can fire a practice of eight salvos from 12-inch guns on disappearing carriages at the rate of one round every forty seconds. But a target might well be in the field of fire for twenty minutes. After the first ten salvos or in case of confusion or casualties this rate could not be sustained, and even if interpolated data should be sent to the guns every twenty seconds the time per salvo would be increased by fifty per cent. Any system is faulty that does not allow each gun to fire when ready; or, if salvo fire is desirable to facilitate spotting, when the whole battery is ready.

Firing by Case II provides this solution in part. The deflection is always ready and ranges can be transmitted to the guns at short intervals without great error. But this system cannot be used for batteries from which the field of fire is hidden or for targets over the horizon. And the sights of most mobile batteries are not suitable for use with this method of pointing. But the rate of sustained fire is increased and there is a great increase in accuracy in direction. It seems probable that Case II firing would show an increase of one hundred per cent in hits on the bow-on target over Case III firing.

The problems of building a seacoast director have largely been solved in the design of antiaircraft directors. The target moves in but one plane which makes the solution simpler. But ranges are much greater and there is difficulty in the electrical transmission of azimuths from the base end stations over many miles of small wires. The following is a sketchy description of a possible complete system of fire control using a horizontal base line with the seacoast director:

Azimuths from the instruments at the base end stations would be transmitted electrically to the director in the plotting room. The director would set up the target position and determine the range and azimuth to

the setforward point. Ballistic corrections would be computed on a separate range correction board (Pratt range board) and adjustment corrections on a spotting board. These would each be set into the director by reference numbers, which would have the effect of adding them algebraically. By means of a cam this corrected range would be converted into elevation for the gun, projectile and powder used, and this would be transmitted electrically to a follow-the-pointer dial on each gun. The azimuth of the setforward point would in a similar manner have adjustment and ballistic corrections applied to it and as corrected sent to the guns by the follow-the-pointer system. Elevation and azimuth would be set by matching the pointers and the guns could be fired at any time.

While mechanically complicated the principle of the director is not difficult to follow. A similar one might be built on the top of a regular plotting board. It would first be necessary to have a miniature target, small enough to travel beneath the arms, but capable of travelling at a constant or varying speed in a straight line. Two plotted points would be plotted in the usual manner, and using the direction and distance thus obtained, the miniature target, or "bug," set on this course at the proper speed. At the scale of the board the "bug" would duplicate the travel of the real target. On each bell the position of the real target would be plotted and checked against the position of the "bug" on the same bell. If the positions coincide no change would be made, but if they do not the speed or direction, or both, of the "bug" would be altered. In a short time the positions would check from reading to reading and the course would be correct. Knowing the speed and the time of flight the position of the setforward point could be determined at any time. The operation of the seacoast director is similar, except that the movement of the "bug" is checked continuously and changes in speed or direction are detected at once. The approximate location, speed and direction of the target is obtained to start with, and inside the director a mathematical point made by the intersection of two horizontal lines is caused to travel on this approximate course. On the face of the director are two follow-the-pointer dials, each representing a base end station. One pointer on each dial is controlled from the base end azimuth instrument. The other is controlled by the movement of the director target. If they coincide it means that two azimuths are the same. If the pointers on each of the two dials continue to coincide it means that the course of the director target is the same as that of the true target. If not, the movement of the director target must be changed until they do. The setforward point is obtained by multiplying mechanically the speed of the target by the time of flight. The range and azimuth to this setforward point is then corrected and transmitted electrically to the guns as elevation and azimuth.

While the number of men necessary to operate this system would depend upon details of design, the manning table would be approximately as follows:

- 1 Range officer.
- 2 Observers.
- 2 Readers. Might be dispensed with, but would be used in case it became necessary to transmit azimuths by telephone.
- 2 Follow-the-pointer operators on director.
- 1 Range correction board operator.
- 1 Deflection board operator. Would also adjust fire in direction.
- 2 Elevation setters.
- 2 Azimuth setters.
- 2 Electricians.

This makes a total of one officer and fourteen enlisted men, a saving of twelve men over the twenty-six required for the present system. The number of instruments would be reduced from seven to five, although the director would be more elaborate and expensive than any instrument now used.

In computing the true wage of a private soldier approximately one thousand dollars per year is usually arrived at. A saving of twelve men for each battery would aggregate twelve thousand dollars per year. Or it would mean that for every eight firing batteries equipped with the director system of fire control an additional battery could be put in service. The cost of equipping a battery with the director system cannot be exactly determined at this time, but the cost in excess of the present type of equipment would certainly be less than fifty thousand dollars per battery. The immediate saving in reduction in personnel would repay one quarter of this sum each year.

But other advantages of the director system would be much more important from the point of view of national defense—

*a.* Dependence on bells would vanish. Tracking would be continuous and firing data would always be indicated on the follow-the-pointer dials. For the first few salvos—the most important—the rate of fire would be at the maximum. Fatigue of gunners and the confusion of battle would have its effect in slowing the rate, but the jump from firing on every bell to firing on every other bell would never be made. If one gun crew should be faster than the other there would be no waiting unless salvo fire should be necessary for spotting purposes. This advantage should increase the average rate of firing by twenty-five per cent at any time and by fifty per cent when firing for considerable periods.

*b.* The opportunities for mistakes are greatly reduced. Four men match four pointers; two men follow the target with an azimuth instrument; and two men at intervals set into the director adjustment and ballistic corrections. At the most there would be but eight opportunities for



mistake against twenty-seven or more with the present system. This feature alone should increase the accuracy of fire by more than ten per cent.

c. Untrained operators could perform the required duties easily, except that observers and electricians should be familiar with the system.

d. The system would be more flexible. With small changes horizontal base, vertical base or airplane tracking could be used. Case II could be used for batteries equipped with sights. Base lines could be shifted with ease.

e. Adjustment corrections would be applied to data at guns as soon as determined. With the present systems there is dead time of ten to thirty seconds.

f. Dispersion in direction would be smaller, since the travel of the director target would be uniform. With a plotting board using Case III any error in location of two positions of the target is exaggerated in determining the setforward point.

The objections to the director system are few—

a. It is more vulnerable than the present system. This would be determined by the ruggedness of equipment. Electrical transmission cable probably would not go out of action sooner than telephone wires. The plotting room would have ample overhead cover so that a hit that would disable the director would wipe out the plotting section. There remains but mechanical and electrical failures, and these would be improbable in a system that could pass severe service tests.

b. Mechanical determination of the setforward point would not solve the problem of sinuous targets. Tests made by the Coast Artillery Board indicate that the best of plotters are no better in predicting the future course of a target than a mechanical predictor predicting on a straight line course.

A modern two-gun long range battery represents an expenditure of nearly two million dollars. An additional three per cent of this cost spent for the installation of a seacoast director and electrical transmission of data would be repaid to the Government in a few years in personnel savings and would make an increase in battle efficiency almost equal to the emplacement of a third gun with the battery.

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### Comments

How many times have Coast Artillery officers listened to someone describe a pretty picture such as Captain Case paints in his article? How many times have you wondered why "some one doesn't do something about it"? The purpose of these "Comments" is not to display any knowledge emanating from the editorial precincts. However, a number of officers (who should *know*) were interviewed and asked to give their ideas upon

this subject. These ideas were collected, a composite photograph taken, and the result is as follows:

Why haven't we such a system as is described above? To be brief, it is just a matter of incompetence on the part of those charged with providing the most suitable fire control equipment for Coast Artillery guns. (Just a pause to remark that this statement is altogether facetious as will appear later). Not only is the Coast Artillery incompetent but so is the Ordnance Department, who, in their time, have turned out some pretty fair work. In addition to that there are such well-known commercial manufacturers as the Sperry Gyroscope Company who have tried their hand at it (are still trying) but have not yet scored. In the words of a famous specialist, we'll "tell you why."

It has been stated often that if an instrument can be constructed for an antiaircraft battery and used for furnishing instantaneous data for firing at a target, capable of moving in three dimensions, that it should be comparatively simple to design an instrument to furnish data for a water target traveling in two dimensions. This is incorrect. It is *more* difficult.

First consider the antiaircraft system. Its guns for the most part are of the same caliber and will, when standardized, have the same ballistic characteristics. (This is saying nothing of the 105 millimeter gun for fixed defense). The range for this gun (or to be exact, the altitude) is provided by a self-contained distance determining instrument. This instrument is not dependent on the use of a measured base line, can be installed in a few minutes wherever the battery desires to go into action and furnishes data sufficiently accurate for the antiaircraft guns. These instruments are common to all antiaircraft batteries and are universal in design.

The principal of universality is one which is followed to the greatest possible extent in designing all instruments and articles of military equipment. The calibers of guns are carefully considered to circumvent difficulties of ammunition supply. Difficulties of manufacture enter into this, too. It is much more economical to manufacture a number of articles from one design than it is to start from scratch in the manufacture of each separate one. Watchmakers and automobile manufacturers practice this.

Due somewhat to accident and somewhat to design the Coast Artillery possesses a great variety of seacoast guns. These guns are of varying calibers from 3-inch to 16-inch. Not all guns of the same caliber have the same ballistic characteristics. The 12-inch caliber is represented in the mortar, the howitzer, and the gun classes. It is probable that the Coast Artillery has a greater number of calibers than are necessary for firing on naval vessels. However this may be, these guns are on hand, they are paid for, they are emplaced, they are useful and cost comparatively little for upkeep. Some difficulty was experienced in the adoption of their pres-

ent fire control system. It was found that coincidence range finders served very well for the smaller calibers. For the larger calibers a depression position finder was sufficiently accurate if the height were great enough. But for some of the batteries neither of these instruments was sufficiently efficient and the horizontal base system of observation and plotting was adopted.

Much difficulty was also experienced in designing a suitable plotting board. Much effort was spent on this problem resulting in several different boards. These plotting boards were not universal. They could not be used at just *any* battery without a considerable number of changes made in base lines or azimuth scales.

One officer advocated a universal plotting board consistently but the other system worked very well until the war came and with it railway and tractor artillery. At the close of the war the Coast Artillery received a considerable number of railway and tractor-drawn guns. Various means of position finding were proposed and tested for them. The D.P.F. and the C.R.F. were both discarded for use with them, due to the considerable ranges of which they were capable. Resort was had to the horizontal base system and the universal Cloke plotting board was adopted as standard. The purpose of the foregoing is to recall difficulties which have existed previously and have been satisfactorily solved.

It is obvious to anyone that a seacoast data computer would be highly desirable but the difficulties of design to be overcome are even more difficult than in the system now standard. It is certain that any computer adopted should be capable of use with the horizontal base system because that is the only system which is efficient at the longer ranges (above ten thousand yards). In designing the computer it is also necessary to consider the larger number of calibers involved and their considerable variation in ballistic characteristics. A universal instrument would require a great number of changeable parts if it were suitable for all batteries. It should be capable of use with railway and tractor-drawn guns and mobility would therefore have to be considered. What would be the weight of such an instrument? What would be its cost? The Sperry people (to mention one well-known instrument concern) would not hazard a guess.

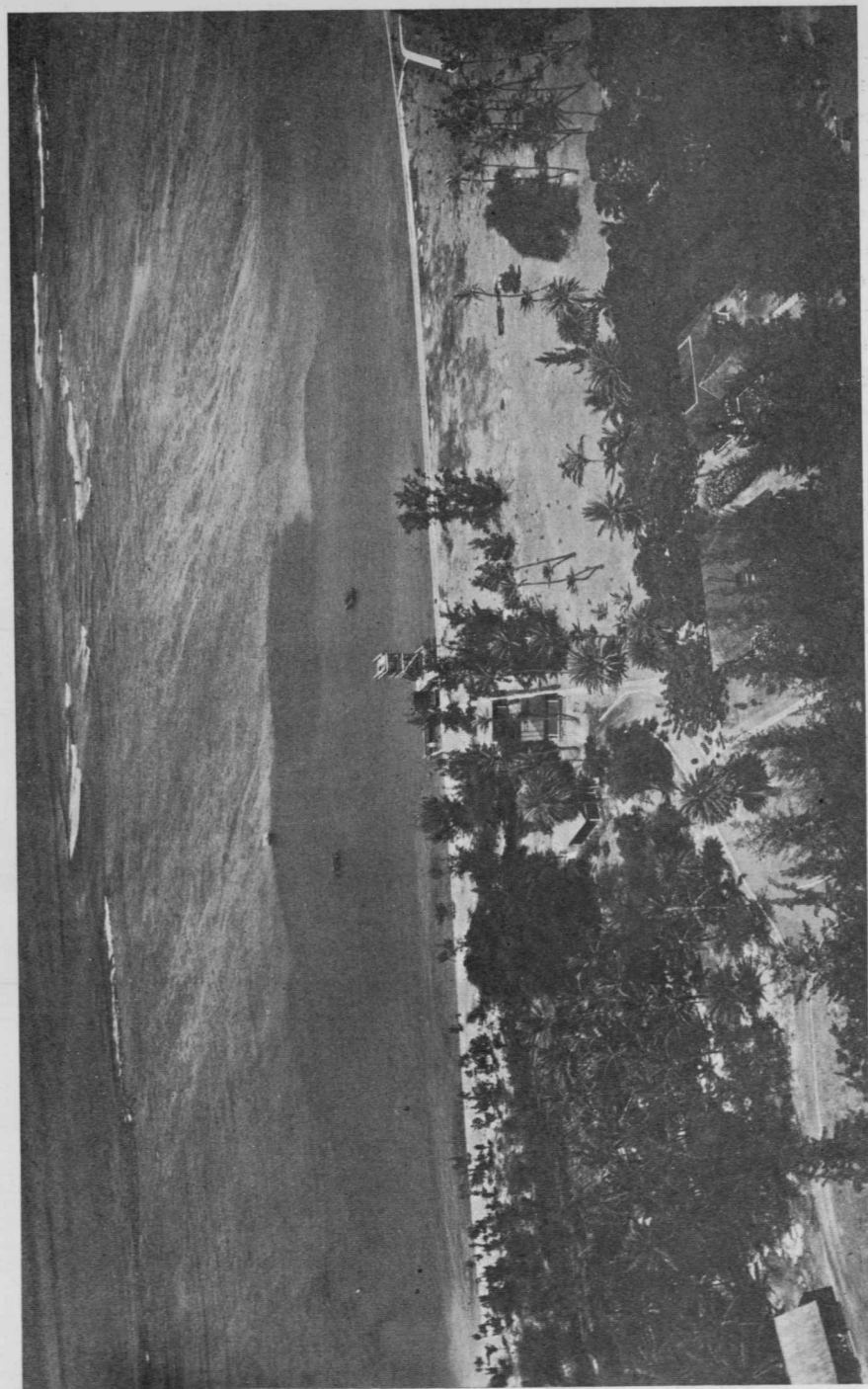
The problem is not altogether hopeless. Because it is difficult those charged with its solution are not passing it up. Development is being undertaken by parts. There seems to be no difficulty in designing a follow-the-pointer system for transmitting data to the guns. Nor is an electrical transmission system from observing station to plotting arm beyond the realms of possibility. Development work is being carried on by the Ordnance and commercial manufacturers to discover a practicable computing instrument for the plotting room. The problem will be solved as other problems have been solved but it is a difficult one.

A system similar to the Navy's could be adopted but seacoast guns require a more accurate system than that used by the Navy. Our most recently installed long range guns are taxing all the ingenuity of the Artillery Board, and other officers studying the problem, to discover a suitable system of observation. For these guns the reliable horizontal base system is insufficient because extreme range is beyond the limit of human vision even with ocular aids. Perhaps the computer should wait until a system of position finding for long range firing is finally approved in order to conform in design to the additional requirements of the system, whatever it may be.

The statements made concerning the savings which can be effected in personnel cannot be commented upon. Apparently Captain Case had in mind an instrument similar to that used by the antiaircraft or by the Navy. It is not at all certain that the computer developed will be similar to these instruments. The final instrument may require more personnel to operate and it may not. Its cost can not be estimated.

It is obviously true that the Coast Artillery needs more personnel. If considerable saving could be effected by the suggested instrument more men would be available to man important batteries now out of commission. Even if the additional personnel were not utilized to form additional batteries there is no question but that hard-pressed battery commanders could use an additional number of men in the batteries now active. Certainly Captain Case did not mean to intimate that we could do with fewer enlisted men in the Coast Artillery. The argument with reference to savings in personnel may be logical but when we enter the sphere of appropriations and the method of obtaining them there are many considerations which govern. It is hardly practicable to trade Congress so many barrels of tactical gasoline for a few additional enlisted men—even if the money value is the same. It just isn't done. Budgets are ponderous affairs and, paradoxical as it may seem, must be simple. They are made out years in advance (or seem to be)—which may be a desirable procedure but does not favor "immediate action." Those charged with preparing it should be possessed of extraordinary ability to look into the future (or else carry an efficient crystal ball). The economy argument may be a potent argument at present, but not in just the manner stated in the above article.

If these comments seem critical of Captain Case such was not their intention. It is especially desired that controversial articles appear in the JOURNAL. This subject is certainly controversial—even to the point of acrimoniousness. It might be called a "hot stove league" subject—talked about but not presented for publication. Captain Case deserves credit for bringing it forward for open discussion. If the comments presented above seem to fall short of being a full answer to Captain Case's contentions it is hoped that other readers will take up the cudgel (or rather, pen) and advance into the pages of the JOURNAL.



—Courtesy of 11th Photo Section, Air Corps, U. S. A.

THE FORT DE RUSSY SWIMMING POOL LOOKING TOWARD THE SEA. NOTE THE CONTOUR OF THE POOL INSIDE THE REEF, THE TWO RAFTS, AND THE REEF STAND.

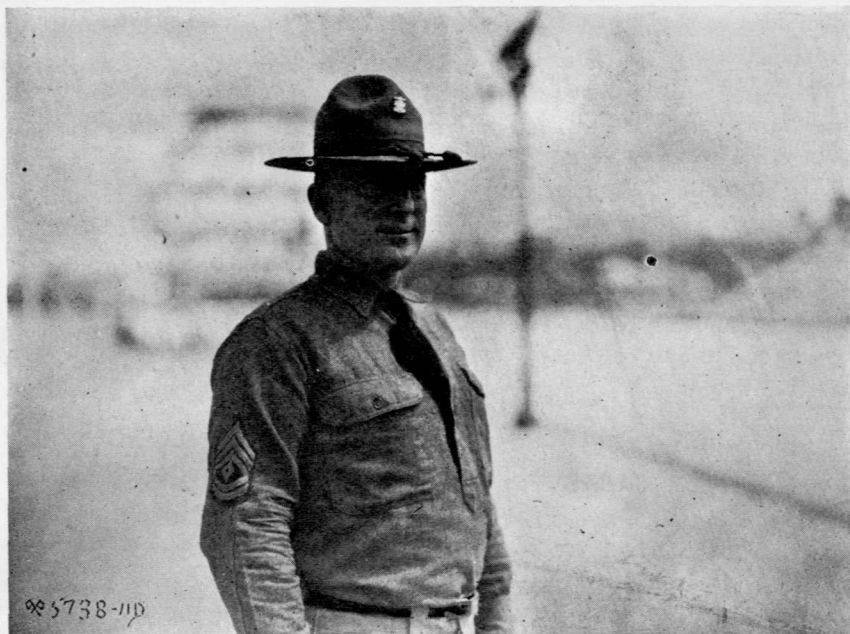
# Army Swimming in Hawaii

By MAJ. P. S. GAGE, C. A. C.

THE Hawaiian Islands and swimming are forever associated in the same thought. The Islands were first peopled by a race to whom the sea was almost as much a natural element for living as was the land. It furnished their highways of transportation, their food, and their recreation. Small wonder that they looked upon the sea as their friend and offered sacrifices to keep in its good graces. Stories of how the Hawaiian women, with nursing babies accompanying them, used to swim far off the harbor entrances to greet the early white voyagers, indicate how early were the native young introduced to salt water. How inevitable, then, that all Hawaiians have the heritage of surpassing ease and "at-homeness" in the sea—and what more natural than that the sport-loving Anglo Saxon, when placed in this environment, should be quick to take advantage of what it has to offer him in the way of bodily development, health, and fun. Nor has the personnel of our Army—and chiefly the Coast Artillery—been slow in availing itself of the opportunities that are open. It does not seem out of place, therefore, that readers of the JOURNAL should know something of swimming in Hawaii as it affects the Army in order that those who have aspirations in this direction—and don't we *all* wish we were good swimmers and could feel at home in the water—may look forward to some day participating and becoming proficient in a sport which is second to none in military value and, according to many eminent authorities, is the best body-builder of *all* athletics.

There are dozens of places on the Island of Oahu (where most of our armed forces in the Hawaiians are located) where one may swim three hundred and sixty-five days in the year. There are fresh-water pools at private homes and in public institutions, such as the magnificent new Army and Navy Y. M. C. A. There are the wind-swept beaches of eastern Oahu where high invigorating combers beat up on smooth coral beaches. There are the small strands on leeward Oahu like Nanakuli—bathing places which open right out to blue water with no intervening reef, and where the huge swells bear one in without breaking until suspended, it seems, fully ten feet above the beach, only to be suddenly let down with a crash and a roar and to be "skited" up the steep-sloping sands for twenty or thirty yards or more—marvelous sport! Of course Waikiki Beach must not be forgotten—the beach itself easily could be, but not the amazing sights one sees there—particularly of the feminine variety. Waikiki, save for those who wish to surf-board, is sure to be a disappointment. It cannot compare with many of the other bathing localities now available on the Island, and were it not for its proximity to the big hotels and a certain fame derived from song and legend it would receive but scant attention. The hotels, in con-

junction with the local government, realizing its importance, however, are doing all in their power to conserve and enlarge it. So far the results have been pretty much of a failure. At great expense "groins" have been built to encourage the deposit of sand but instead there has, in most places, resulted a scouring effect which, instead of enlarging the beaches, has actually taken away much of what little sand there was. And the contention is that much of the sand in front of the hotels at Waikiki has been carried over and deposited on the Fort deRussy Beach a few hundred yards to the westward. It is doubtful if there is any truth in this, but



—Courtesy Photo Section, Signal Corps, U. S. Army

**FIRST SERGEANT E. C. CORN, THE VETERAN COACH OF THE  
FORT DE RUSSY SWIMMING TEAM IN HAWAII.**

certain it is that at present the deRussy Beach is the most expansive on the southern shore of Oahu—and it is increasing.

And this brings us to the center of Army swimming activity in the Islands, and that means pretty much the center of *Army* swimming activity, for the deRussy team has an enviable record over a period of years and is ready at any time to lock horns—or arms and legs—with any other service team—Army, Navy or Marines. Such has been the reputation of the deRussy team that it naturally attracts to itself most of the "web-footed" personnel that comes to the Islands. But aside from this the coach, 1st Sgt. E. C. Corn, develops most of his material from the ordinary "run-of-the-mine" as it comes to his battery, Battery "A," 16th

Coast Artillery. He has an uncanny faculty for detecting likely swimmers from any given bunch of recruits sent him, and once he gets on their trail and finds them interested, they are sure quickly to form up into team caliber.

Himself a man of exceptional athletic attainments and fine physical set-up, he has the power to hand this on to the men he is coaching and to imbue them with the competitive spirit and the will to win. First of all, Sergeant Corn will not bother with any man who is not interested in swimming or who will not lead a clean and wholesome life. He does not attempt quite the rigid training common in university teams for his team is in training practically the whole year 'round, but his motto is "temperance in all things." He allows his swimmers little starchy food but lots of vegetables and fruits—meat only once a day. Of course "booze" is not on their list and very little smoking is permitted. He insists on regular training hours, always letting up a little the day before the meet. Work in the water is from about 1:30 till 3:30 p. m., Wednesdays, Saturdays and Sundays usually excepted. His team has competitive meets with service and civilian organizations at *all* seasons.

Sergeant Corn strives for a well-balanced team over and above the development of exceptional "stars"; this is one of the principal factors in his ability to annex trophies. A well-balanced team means that he has men who can compete in the following events:

- High rigid plain and fancy diving
- Fancy spring-board diving
- Breast stroke
- Free style
- Back stroke
- Medley
- Plunge for distance
- Water polo

Though he naturally likes to get men with previous swimming history, this is by no means essential to him. Most of his swimmers and divers are developed from lads who have had little or no previous experience and many can scarcely swim at all when he starts to work on them. (It is interesting to note that some of his service champions have come from this latter category.) His squad usually consists of from twelve to sixteen men ranging in age from nineteen to twenty-eight years. He prefers to have all men in his battery where he can have close supervision over them and the aspiring recruit should "join-up" with Sergeant Corn in one way or another at the very outset of his Hawaiian tour.

Like the good bridge-player, Sergeant Corn always keeps the score in mind and in training his divers, particularly, is unique in stepping his pupils up to the more difficult and high point-winning dives even before they have fully mastered the simpler ones. In this way he gives his stu-



dents confidence and later on they master the fine points of *all* their dives. That his method is sound is evidenced by the fact that this year Private Loutitt, a youngster about nineteen years old who had but little diving



—Courtesy Photo Section, Signal Corps, U. S. Army

THE 1930 FORT DE RUSSY SWIMMING TEAM IN HONOLULU. NOTE THE  
SPLENDID PHYSIQUE THAT SWIMMING GIVES THESE YOUNG SOLDIERS.

experience up till a year ago—when he enlisted—this year won the Hawaiian Open Championship in plain and fancy spring-board diving and was later sent to the Pacific Coast to compete in the National A. A. U. meet, there.

Some instructors go in for “dry land” or beach practice to learn the strokes. Sergeant Corn does not, but he is strong for “mirror practice”—standing in front of a large mirror to practice and watch one’s own arm motion. Likewise he stresses emphatically the *rhythm* that exists between muscular action and breathing that forms the basis for all good swimming.

It might be of interest to see what a few of the accomplishments of the deRussy team have been in the past three years:

Since September, 1927, this team has never been defeated in a service competition.

In September, 1927, it defeated the U. S. Marines in the National Swimfest held in the Honolulu Natatorium. Score—thirty-six to twenty-eight.

Won the Inter-Service Swim Meet held in Honolulu between the Army, Navy, and Marines—April, 1928.

In June, 1928, when the U. S. Fleet was in Hawaii with approximately twenty-five thousand personnel, the deRussy team challenged the fleet. A dual meet was held and deRussy won by one hundred points to the fleet’s thirteen.

Defeated all other service teams in the Acme Meet, April, 1929, by a score of twenty-eight to the nearest competitor’s eleven.

Won the National Army and Navy Y. M. C. A. Pentathlon Trophy, May, 1929, with a total score of nine thousand six hundred and twenty-five points. This was in competition with all the Army and Navy Y. M. C. A.’s in the continental United States and its outlying possessions.

Thirteen team members won medals and two received cups in the *Star Bulletin’s* (Honolulu’s evening newspaper) one-mile open competition—June, 1929.

Won the most points in the service events at the Women’s National Swim Meet at the Honolulu Natatorium in August, 1929—ninety-four points to nearest competitor’s twelve—in competition with all the other service teams in the Islands.

A selected team visited the Island of Maui in September, 1929, giving swimming lessons, methods of coaching, etc., to the public schools there.

Won the Senior Club Trophy offered by the Honolulu *Star Bulletin* in its twenty-weeks swimfest completed May 31, 1930. In this it defeated the Hui Makani, a club composed of local civilian swimmers and which proudly lists among its members the now famous Kalili brothers. (Maiola Kalili is now a keen competitor for “Buster” Crabbe’s laurels.)

Won the Army and Navy Y. M. C. A. All Service Hawaiian Islands Championship for the third consecutive time by a score of sixty-six to

eighteen (nearest competitor) in competition with the Navy, Marines, Luke Field, Fort Kamehameha, and Fort Shafter.

Won the National Army and Navy Y. M. C. A. Pentathlon Trophy for the second time in May, 1930, with a score of thirteen thousand five hundred and fifty points—three thousand nine hundred and twenty-five more than last year.

Won the most points in the service events in the International Swim Meet in July, 1930—thirty-three to next closest—two.

The deRussy team has established nine service records in the last three years while its outstanding divers have captured four Hawaiian championships and also one U. S. national junior championship (Fancy Spring Board title).

The team hopes to arrange a dual meet in the not too distant future with the Panama Canal team, but up to date the authorities have been unable to effect a get-together.

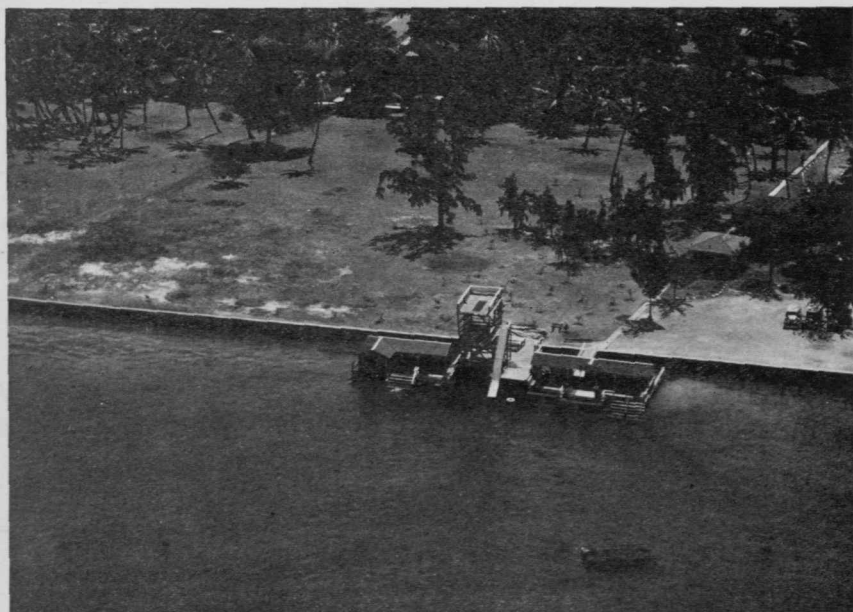
From the above—and the records given are by no means all—it is easy to see that the Army swimmers in Hawaii are a real factor in local sporting circles, and it is equally believable that, were the term of enlistment longer or the Hawaiian “turn-over” not so great, they would develop much stronger contenders for national, or even international, honors. And it all really goes right back to *swimming in the Hawaiian Islands*—that place where above all others on this earth, swimming conditions are *ideal*.

Thus far one may be led to believe that the enlisted personnel has a sort of monopoly in the water in Hawaiian service circles. True—enlisted men within recent years have constituted the actual teams with some of the officers having a hand in the coaching—but practically *every* one in the service, men, women, children, and babies—all swim in Hawaii and count it as one of the chief reasons for liking the Islands. After being there a few months, an enlisted man who cannot swim is looked upon about as a candidate for “the awkward squad.” For example, outside of the recruits, the writer does not know of a single man at Fort deRussy who cannot swim. During certain seasons of the year the batteries there fall in for reveille in their barracks clothed in nothing but an abbreviated pair of swimming trunks and, after the rolls are called, are marched straight down to and off the pier into twenty feet of water—a brisk swim around one of the rafts and out—a fresh water shower, and then “bring on the hot cakes and syrup!” It’s hard to fill ’em up. This little diversion has been found to be a snappy alternative for the G. I. “arms on hips” after-reveille calisthenics. To know how the men enjoy it, they would have to be seen.

Now before closing—just where does all of this service swimming chiefly take place? Schofield Barracks, the big inland post, is about ten miles from its swimming beach on the north shore, Haleiwa, and about twenty-five miles from Honolulu and Fort deRussy. But without fear of

contradiction it can be stated that practically all service people prefer, as a "steady diet," the swimming pool at deRussy to that of any other place on the Island and scores of people, officers, enlisted, and civilians, come there daily to take advantage of its recreational facilities.

Also, it is equally true that practically all the serious team training is now done at the Honolulu Natatorium or War Memorial Pool, a huge concrete water-stadium on the seashore at Kapiolani Park, Waikiki. This pool is a hundred meters long and a third as wide and encloses a large area of still salt-water open, through sluices, to the sea at all times. It provides over a dozen marked-off swimming lanes, furnishes dressing



—Courtesy of 11th Photo Section, Air Corps, U. S. A.

WHERE MOST OF THE ARMY RECREATIONAL SWIMMING IN HAWAII TAKES PLACE. THE SWIMMING PIER AT FORT DE RUSSY, WITH RAFT IN THE FOREGROUND. TWO OF THE BATH HOUSES IN THE RIGHT BACKGROUND.

rooms, diving platforms, etc., and is ideal for coaching and training staffs. It is municipally owned and operated and the Federal Forces are always welcome to its use. Here practically all the large swim fests are held and here most of the Army teams in the Island train.

But for pure fun and enjoyment the deRussy pool comes into its own. This pool was artificially dredged in 1913 inside the coral reef in front of the fort. It was originally dug out to provide a coral fill for part of the reservation, to provide material for the parapets for the seacoast cannon there mounted, and to permit the barges with the heavy guns to be brought close to the point for their installation. The pool is about one

hundred and fifty yards across and its length varies from two hundred to three hundred yards or even more depending upon how far one wishes to swim, as it is of irregular outline. The water is from fifteen to twenty-five feet deep right off the diving boards. To gain admittance service people have only to identify themselves as such to the pier guard on duty, but civilian friends of service personnel must have passes. Through the generosity of the Department and other recreation funds the bathing facilities at deRussy have been added to in the last three years so that they now consist of an officers' pier, high diving tower with eight, twenty, and thirty-foot platforms, a twenty-five-foot shoot-the-shoots, enlisted men's pier, row-boat and boat-well, two fourteen-foot low ash spring boards, approach steps affording easy entrance and exit to deep water for those not diving, two large rafts (nine by eighteen feet) at varying distances from the main pier, a children's shallow sand-covered pool in rear of the officers' pier, telephone connections, and flood lights for night bathing. Then on the inner edge of the distant reef bank has been erected a "reef stand," a resting place for the more venturesome swimmers. This has a roofed shelter from the winds which, even in Hawaii, feel mighty cool after a long swim. It also has a low spring board and concrete step approach. Then the deRussy beach—about one hundred yards to the eastward of the pier proper—provides a sunning and picnicking area unequalled on the south shore. It is but a short walk along the "see"-wall (advisedly so-called) or a nice little distance by swimming from the main pier to a "cat-walk" now constructed for crossing over the sharp coral intervening between deep water and the beach. A little hut with palm thatched roof has recently been erected on the beach housing a picnic table and benches. This may be reserved for service parties and has proved very popular, often being asked for days in advance. Three bath houses are located near the pier for the use of service folk—one for officers, one for ladies, and one for enlisted men from other posts with a room for their wives. These bath houses are electric lighted, have fresh-water showers, individual dressing room, and toilets. Ample parking space for cars is available in the immediate vicinity of the pier and bath houses.

Water polo for officers is now gaining headway with a customary four o'clock "choose-up-sides" game each Wednesday afternoon. The officers and their ladies and friends habitually gravitate to the pier from about 3:30 o'clock on each afternoon, and since the new pier has been completed this year, it is becoming more and more of a delightful and informal social gathering place for exchange of the latest gossip, the pay-bill, and sometimes—though not often—"shop." The civilian element always adds a note of interest if only to hear the women exclaim "Did you ever see such a daring bathing suit as that girl has on!—Who allowed her on the pier anyway?—Who is she?" The current movie stars from Hollywood visiting the Islands, prominent capitalists and professional men—in fact

notables from all over the world are frequently seen and met at the pool and, of course, greatly add to its attractiveness.

The main object in mind in recent construction has been to make little objectives for the swimmers to aim at—to take them away from the immediate vicinity of the main pier—and to improve their swimming. Persons who at first would leave the steps but a few feet, gradually get up nerve to negotiate the nearer of the two rafts, then the farther, and finally the reef-stand. Almost without realizing it, they have immeasurably improved their swimming—then if they wish to brush up on the fine points of strokes, breathing, rhythm, etc., a capable instructor is at hand on the pier to give lessons at a nominal sum. Many parents avail themselves of this feature for their children if not for themselves.

There is much more that can yet be done to improve the swimming facilities at Fort deRussy, but it probably will have to be done gradually as money is always hard to get and labor is more or less interrupted. (In passing it should be stated that all the construction in the past few years has been accomplished by enlisted details.) It is difficult to see, however, how *swimming* in Hawaii can be improved as it is already perfect. But with the two-year term of foreign service policy recently announced by the War Department it is not only more important than ever that every effort be made for a continuity of policy both as regards the up-keep and improvement of existing facilities, but also as to the perpetuation and training of the fine Army swimming team now established. More than ever must officers and enlisted men alike go to Hawaii who are interested or who are likely to become interested in swimming and are anxious and willing to start right in as soon as their tour commences to foster and encourage all that pertains to this ideal recreation and sport.

# The Effect of Weapons on War

By MAJ. GEORGE S. PATTON, JR., Cavalry

WHEN Samson took the fresh jawbone of an ass and slew a thousand men therewith he probably started such a vogue for the weapon, particularly among the Philistines, that for years no prudent donkey dared to bray. Yet despite its initial popularity it was discarded and now appears only as a barrage instrument in acrimonious debate.

Turning from sacred to profane history, we find it replete with similar instances of military instruments each in its day heralded as the *dernier cri*—the key to victory. Yet each in its turn retiring to its proper place of useful though not spectacular importance.

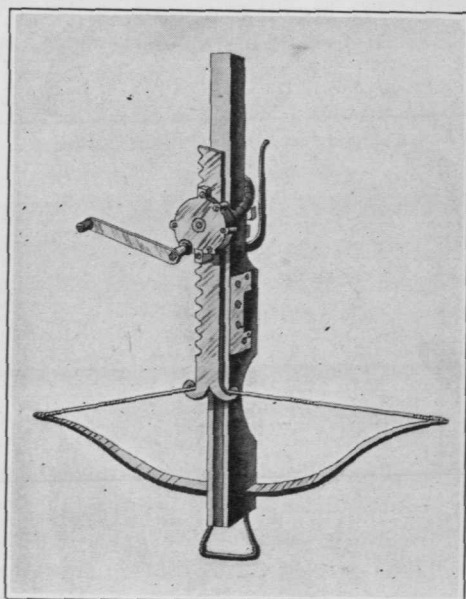
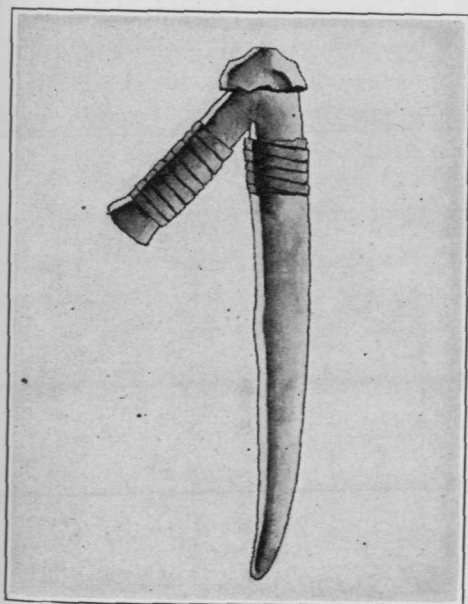
Of yore, the chariot, the elephant, armor of various sorts, Greek fire, the longbow and gunpowder, to mention only a few, were each acclaimed. Within our memory the dynamite gun and the submarine were similarly lauded. Today the tank, gas and the airplane are aspirants for a place on the list.

In investigating the question let us begin by picturing, if we may, the cataclysmic effect produced on primordial society by the first savage who chanced to use a splintered rib as a means of giving point to his demands for a larger share of meat and women. How they gibbered round the half gnawed bison as with signs and gutturals they described the fight. How their hairy bellies palpitated as into the twilight of their minds the idea flickered that they too might be so stuck. "Romance is dead" they growled; "The day of tooth and fingernail is done."

Eons perchance rolled by before some timorous soul (?), fleeing in vain the questing menace of a prodding point, seized, in his agony of terror, a jagged stone and, squealing as he hurled it, saw the pikeman fall—and trembling, knew artillery was born. Continuing, it is easy to imagine the appearance of a wattled shield to fend the stone and, after the inevitable lag-phase, ages long when men thought dimly, such shields, in turn, made useless by the sling and throwing stick. Another lag and then the bull-hide shield restored the balance and robbed the sling and javelin of their lead. Consider how the scythe chariots were rendered innocuous by the simple means of opening the ranks to let them rattle through. Later at Zama similar tactics permitted Scipio to render futile the tankish charge of Hannibal's elephants; no longer a novelty and so dreaded as when Phyrus used them. Again consider how, off Sicily, the Roman Ravens (boarding bridges) confounded and destroyed the far superior Carthaginian fleet; not by their inherent value but by the devastating effect of their novelty. They, too, quickly passed.

The long struggle between armor and weapons abounds in like examples of alternating successes. When Cortez defeated an army by a

charge of fourteen horses it was not the valor of his *caballeros*, but the fear induced by the novelty of their mounts, which routed the Indians. In this case, however, the results attained are not traceable wholly to surprise. The rush of horsemen, and similarly of tanks, reawakens a submerged race memory of ancient flights before the devastating rush of long extinct carnivora. We might continue almost without limit eliciting further examples, but repetition is wearisome and enough has been said to justify us in formulating an axiom. It is: The initial appearance of each new weapon or military device has ever marked the zenith of its tactical effect, though usually the nadir of its technical efficiency.



Surprise is the most ancient and most potent of military methods. Novelty is a form of surprise, and it is surprise—the fear of the unknown—not power, which appalls us.

The wrestling adage that there is a block for every hold applies equally to war. Each new device is invariably followed by its self-induced counter. The utilization of these new methods and their counters, these holds and blocks, is highly useful in that they add to our combat repertoire. But their employment is fraught with danger if, beguiled by their transitory preeminence, we place our reliance wholly upon them.

It is only in the writings of the romantic novelists that we find the hero successful through the knowledge of some secret lunge. In the duel or in the fencing room success goes to the man of many good attacks and sound parries; to the man who uses all the means at hand for the accomplishment of the end sought—victory.



Here it is well to pause a moment and examine certain characteristics which have definitely marked the march of military evolution. From the very beginning our gifted species has expended vast amounts of time and ingenuity in a strenuous though futile effort to devise safe methods of war; means of killing without being killed. Ardant du Picq sums it very aptly when he says: "Man engages in battle for the purpose of gaining victory, not for the purpose of fighting."

Defensive devices are an outgrowth of the same desire; the stone and the shield, the lance and armor, gas and the mask. Obviously the emotion back of these manifestations is love of life—an emotion which from age to age has grown stronger as the chances for its enjoyment have increased.

The hero is of truth a rarity. The most striking proof of this is found in the fact that throughout myth, legend, song and story he has invariably shared with that other rarity, beauty, the place pre-eminent. Much heroism exists, but few heroes. It is rather disheartening to observe that man in his efforts to reduce danger has enhanced the requisites for courage necessary to withstand it. The sweat, noise, excitement and bodily contact of the close encounter act as a sedative on the brain, the seat of fear. After the rush has started it takes less hardihood to charge than to sit stolidly in a ditch awaiting dissolution via the impersonal belch of a dropping shell.

In attempting to assign just valuations to the latest lethal devices, we shall not go far wrong if we keep in mind the lessons of history.

In the first place, living in a mechanical age we are prone to exaggerate the value of machines. Again, lay opinion is chiefly formed by the press, where novelty is always "front page stuff." Erroneous habits of thought also play a part. During the World War correspondents were not allowed at the extreme front where the actual bludgeoning of war took place. Necessity imposed on them the task of making copy of what they saw; guns and machines mostly; hence it happened that they put undue emphasis on these elements and so formed in the minds of their readers a habit of reverence for machines.

The romantic literature of the war, now as always, centers on the exploits of heroes. The unthinking imagine that in the future all machines will be operated by these rare individuals and that the phenomenal results attained by the few will be duplicated by the many. In sport we have Sande, Tilden and Jones, whose exceptional capabilities we admit and admire. Yet in war we fondly imagine whole armies of Sergeant Yorks and Guynemers. Popular antipathy to unhappy endings induces writers to have their heroes "Live happily ever after," whereas in fact only too many citations for valor end: "For this act he was awarded a Medal of Honor, posthumous."

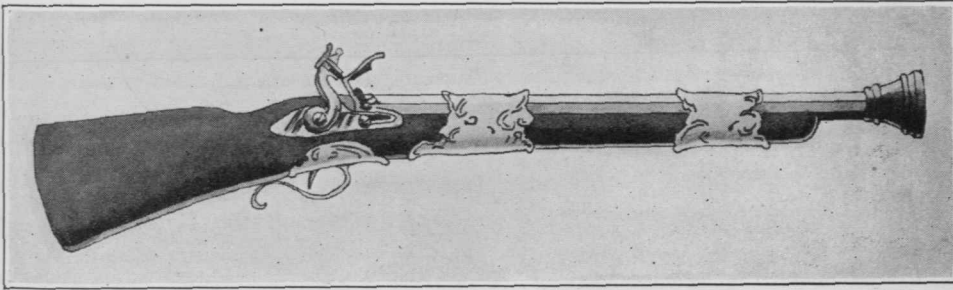
The use of gas as a weapon is abhorred by most civilized nations. Those who in future first resort to it may well find themselves condemned by public opinion. In short, it is against the rules. But will such rules, such

scraps of paper, deter belligerents? We fear not. When two highly paid athletes contend for honors in the squared circle they too are bound by rules; so much so in fact that of late rules have proved more potent than blows. War is not a contest with gloves. It is resorted to only when laws, that are rules, have failed. If some adversary gasses us, we can under the rules, gas him. Hence it is not brutal, but merely intelligent, to investigate the probable future military effects of gas.

What are we to expect? Casualties, certainly, destruction, no.

Gas is no more devastating to the prepared soldier than were stones to the shield-guarded barbarian. It is a powerful and effective weapon, but the day of its omnipotence and the day of its birth were one.

The gruesome pictures of whole populations writhing in their last agonies midst the fumes of an all-destroying vapor, are "bunk."



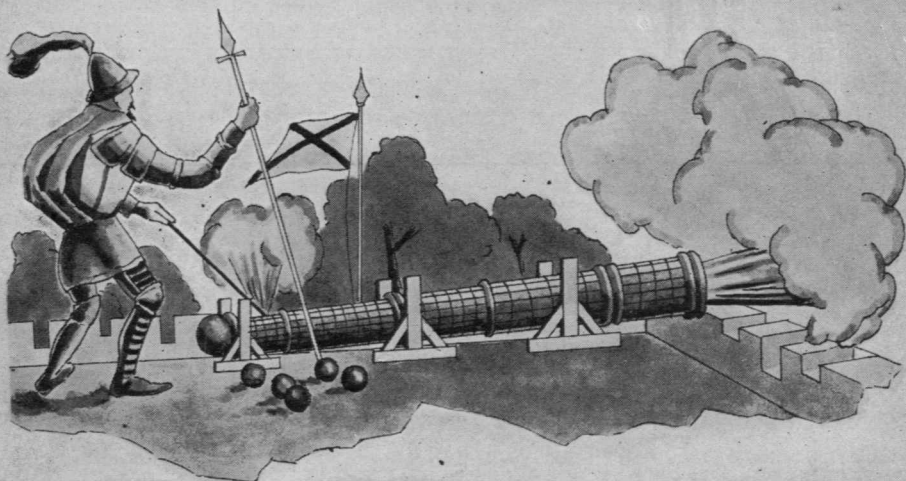
Setting aside the chemical difficulties and mechanical complications inherent to such an act, we have a much stronger and simpler reason for this conclusion. For centuries all wounded and such unwounded prisoners as were valueless as slaves had their throats cut. No one was shocked; it was the custom. Finally it occurred to some altruistic and thoughtful soldier that while the practice was excellent so long as he was the victor, it had its drawbacks in the not unlikely event of his being the vanquished. The notion of humane treatment for the foe was born. Years of use sanctified the idea; it became the custom. Yet the horrid thought pops up that help for the helpless sprang from love of ourselves, not of others; from fear of retaliation. The same situation effects the noisome idea of gassing non-combatants. It is contrary to our developed sensibilities, it will produce retaliations; it is not a safe method of war.

Shortly after the Spanish War Col. T. R. Roosevelt wrote a book called "The War in Cuba." Mr. Dooley, in discoursing on it, said: "I have but one suggestion to offer the colonel, he should have called his book, 'Alone in Cuba'."

The same remark might justly be applied to those who now proclaim the airplane as the sole means of waging future wars. They think that they will be alone in the air. So far as a major contest is concerned this

notion is absurd. The enemy will be there too, and it will be a case of dog eat dog. When planes attacked us in France we hid and prayed, now we shoot back and with an ever increasing effect. There is an old saying in the Army that no pursuit is so hot as that of an unresisting foe. When the foe fights back ardor slackens. Have you ever noticed the fervent manner in which a terrier chases a cat until she turns, and then how often he remembers that he has an immediate engagement elsewhere.

Air attacks will be numerous and bloody; such is the nature of combat. They will be no more conclusive than are the independent attacks of any of the other arms. As for bombing raids against cities, London still stands, and the inevitability of reprisals will tend to reduce still more this messy



business. The airplane is here to stay. It is a great arm, but it has not more replaced all others than did gunpowder.

That fecund mother, Necessity, who at Troy produced the wooden horse, begot of the machine gun that horse's modern prototype the tank—an identical twin to all her preceding military offspring; the counter to the latest form of defense.

At first the tank, despite the innumerable ills of childhood, enhanced in this case by premature birth, was a success. It was a surprise. As it waxed stronger it still prevailed, to a degree, due to its inherent worth. It has been likened to an armored knight. The first emblem of our tank corps was such a warrior. The similarity is too apt. So long as the knight combined movement with invulnerability he prospered. When he sacrificed mobility to protection, he passed on.

In the World War, infantry with their machine guns were impotent against tanks. Only direct hits by artillery, bad going, and above all, engine trouble, stopped the tanks. Now every arm has its quota of antitank

weapons which are quite effective. The terror of surprise is gone. In a major war tanks will fight tanks. A land Trafalgar will be brief, bloody, and pyrrhic in its results.

By land and sea it is the same old story of guns and armor. We shall always have battleships, and we shall always have tanks and land destroyers, too, in the form of armored cars. Also we shall still have losses. Utopia is not yet. The tank is vastly potent and rigorously limited; it is not and never has been a life insurance policy for tank gunners and drivers. It has no more the power to replace the other arms than had the long bow.

General Forrest said: "War means fighting and fighting means killing." When that grim time comes again, remember that all arms are potent, none is paramount.

We are well aware that our efforts to prove the fallibility of weapons as a key to victory are wasted on students of history. Unfortunately the lure of the bizarre tends to make mankind as a whole disregard its teachings. Nor is this a phenomenon confined only to things military. When sages point to the sublime inevitability of the cycles of history in morals, politics, dress, and so on, they are told: "True for you, but things have changed. We have the radio now and women vote." Similarly in matters military when we point to the endless cycle of holds and blocks we are told "That was all true in the days of Napoleon, but now we have gas, tanks, airplanes or what will you."

So far as we know few, if any, victories are traceable to weapons.

Caesar destroyed the poorly armed Gauls and he did the same to the well-armed legions of Pompeii.

In 1866 Prussia defeated the less well-armed Austrians—in 1870 she destroyed the better armed French.

Advertisements to the contrary notwithstanding, Big Business does not owe its bigness to a filing system (a business weapon).

Already in this article we have made use of part of Napoleon's magnificent definition of genius. Here it is in full. He says: "Genius is the ability to utilize all the means at hand for the accomplishment of the end sought."

The thought applies equally to weapons; we must use them all.

To us it seems that those persons who would scrap the old and rely only on the new are on a mental parity with the poor man who, seeing an overcoat, pawns his shirt and trousers to buy it, only to find that it is burdensome in summer and not wholly satisfying even in January.

Wars are fought with men, not weapons. It is the spirit of the men who fight, and of the men who lead which gains the victory. In Biblical times this spirit was ascribed, probably rightly, to the Lord. It was the Spirit of the Lord—courage—which came mightily upon Samson at Lehi that gained the victory. Not the jawbone of an ass.

# Suggestions for Increasing Public Good Will Towards the National Guard

*By* 1ST LIEUT. W. H. ROSE, Inf. (W. Va. N. G.)

AMONG the various problems that confront the Company Commander of a National Guard unit at a one-company station is that of moulding a favorable public opinion. It rests within the hollow of a commanding officer's hand whether the citizens of his community look with favor upon his unit—or what is far worse—to look with disfavor or to completely ignore the company officers and their small band of loyal followers.

The armory can be the scene of many public events in which the National Guard will have the leading part, causing a large number of influential citizens to become acquainted with the Guard and to learn its ideals.

On these occasions when citizens visit the armory they should be met at the armory door by the Company Commander and given a hearty welcome. Designated officers conduct them through the supply room and over the armory. Equipment is displayed and its use demonstrated for their benefit. It is well to have on hand a member or two of the organization who is especially familiar with the equipment for these demonstrations.

Many organizations find it of value to have an annual "visitors' night" at which time invitations are extended to the city's business leaders, men high in political life and members of civic clubs, to visit the armory. Usually for these occasions the state Adjutant General and higher Guard officials are asked to be present.

Some organizations also have what is known as "family-night" at which time the members of the immediate family of the Guardsmen are asked to visit the armory.

For the above two affairs a special "show" drill is prepared and some entertainment given. A bowl of punch and cigars are provided. To secure favorable newspaper mention, extend an invitation to the editor of the local newspaper to be present for these affairs.

For visitors' day at camp the middle Sunday is generally conceded to be the best time. Have the enlisted men extend their own invitations for this day as, usually, this will call for a meal being served to these visitors for which a small sum will have to be paid into the company mess fund by the individual soldier who may have guests.

A good non-newspaper publicity stunt that can be used to a good advantage at the close of the annual summer encampment period is to pay the men in cash instead of the usual company commander's personal check. When making payment use silver dollars as far as possible, ask-

ing the men to spend them through local stores in the way that they would have spent their check.

This plan will call attention to the Guard in a forcible way and will prove to the merchants of a town the economic value of such an organization. These silver dollars will be in circulation for many months after leaving the company commander's hands and will be known as "army dollars."

It will be necessary to make arrangements with the local bank to have this money on hand at the close of the encampment. (This plan is not feasible in the western states where there are many silver dollars in circulation.)

Respect and good feeling can be further pushed by the participation of the organization in the affairs of the American Legion and other veterans' societies—that is, *if the National Guard has been asked to take part in such affairs*. This participation will include a parade on Memorial Day, Fourth of July or Armistice Day, these parades will be held in the average town at least once each year. A firing squad should always be furnished for the ceremony incident to the funeral services of a deceased veteran.

The cooperation and good will of the local county chairman of the Citizens' Military Training Camps Association should be gained. This can be brought about by encouraging members of the Guard company to attend the C. M. T. camps.

In the event of a death in the family of a citizen soldier have a wreath bearing the designation of the organization sent to the bereaved one's home.

With most organizations medals and trophies that are won in camp are usually presented to the personnel on the last Friday or Saturday of the training period. A good stunt is to have these medals and trophies presented to the Guardsmen on their return from camp. If possible have higher Guard officials present for the ceremony. The general public being extended an invitation to witness the presentation ceremony.

The value of public opinion cannot be under-estimated or can it be over-estimated because it is the people who pay the taxes that support the Guard, and it is far better to have the public as boosters than to have them as chronic knockers.

# Current Events Overseas

## Foreword

Upon invitation by the JOURNAL, officers of the Department of Economics, Government and History at West Point will present for the next few months in these columns comments upon current events in the various countries across the water. It is hoped that these comments may help the readers in following, and understanding the significance of some of the most important movements in current social, political, and economic fields. If the readers of the JOURNAL feel that these articles are of interest and value, the series may be continued.

One great difficulty in the preparation of such articles lies in the time which must elapse between the writing and the reading of the printed material. Thus today, September 26th, I am writing this Foreword for the issue due November 1st. When events of world-wide significance are occurring in such rapid succession—Russian grain sales undermining prices; German election returns with their strong Communist and Fascist results; a new secretary-general for Mussolini's black shirts; an imperial conference due in London; unemployment creating new problems day by day; France and Italy glaring at each other across the Alps, and Italy and Yugoslavia across the Adriatic; Spain holding down a possible outbreak with Berenguer at the wheel—when the situation is so tense in so many directions, our comments may be out of date by the time they appear in print.

The officers have this difficulty in mind. They will frame their articles in an effort to make them most valuable as an interpretation and explanatory record of events, so that, even if startling new developments have taken place since the writing, the material will still be valuable for the reader as background knowledge.

The world overseas has been divided into six areas, as follows:

- I. England and the British Empire.
- II. Western Europe.
- III. Central and Southern Europe.
- IV. Eastern Europe.
- V. The Balkans and the Near East.
- VI. The Far East.

To each area an officer has been assigned, whose duty it is to watch developments through the month, collect material from the best sources, study it, and interpret it in his section of the article at the end of the calendar period. His interpretation is passed up to me a few days before the end of the month. And it is my interesting duty to edit the article as a whole before dispatching it to the editor.

With this explanation of purpose, hope, and method of this series, I leave the article to the judgment of the readers.—LUCIUS H. HOLT, *Colonel, U. S. A., Professor.*

## I. England and the British Empire

R. B. B.

The world-wide scope of British interests, as well as England's position off the west coast of Europe, give England and the British Empire the first place among the areas discussed. And certainly, enough critical conditions exist in this area! We can select only a few of these for consideration.

*Unemployment in England.* Two million unemployed are now receiving the dole, and pessimism is rife. Leaders believe that still worse is to come, that the real crisis has not yet arrived. A group of representative business men have organized themselves in an effort to further a solution of the problem. Their measures should be carefully watched, for they are attacking a problem which exists in all the major industrial countries of the world today. If they can work out a solution, other countries would eagerly follow. There is a prevalent belief, however, that the causes of the world-wide depression are beyond the power of the industrialists and statesmen of any one country to remove.

*Domestic Politics.* MacDonald was brought into power largely because the people wanted to try the proposed Labor panaceas for Britain's ills. These panaceas have obviously failed; and yet MacDonald remains in power. Why? Because neither the Conservatives nor the Liberals have any better plan than Labor has tried. It is better politics to let Labor bear the blame until the economic skies begin to clear. In the meanwhile, however, the radical wing of the Labor party embarrasses the administration by its heckling and its demand for "Socialism in our Time." The British electorate, however, is essentially conservative in nature, and the radicals and communists find little response to their appeals.

*Imperial Conferences.* Ministers of the dominions are arriving in England for the imperial conference of October. Australia, after facing bankruptcy under its Labor-Socialist government, has been aided by the Bank of England on condition that it trim its budget and stop construction on non-paying projects. Canada has just turned its government about face, and put into effect a tariff obviously aimed at United States products. South Africa, always a bit restive, threatens to bring up the question of the "Right of Secession." But probably the most interesting discussion of the conference will be about a plan for free trade within the British Empire and a high tariff wall against all outside—a plan advocated by the press magnates heading the new United Empire party. With the varying interests of the great dominions, such a plan seems politically impossible, but the discussions should be most interesting. It is worth noting, however, that all important interests in England now favor some degree of tariff protection. England has gone far from the old free trade days.



*Continental Relations.* The British ministry is most anxious for radical reduction of armaments, but can accomplish nothing until France and Italy come to some agreement in their respective naval limitations. So far, there have been evidences of negotiation, but no agreement. The pleas of Foreign Minister Henderson have accomplished nothing. The present British government, however, is definitely committed to reduction of armaments correlative with reduction by its neighbor.

*India.* The Simon report on India proposes that the dynastic government of the Chelmsford-Montagu pattern be replaced by provincial governments adapted in each case to the local situation and abilities; with a Federal Government of India whose assembly shall be elected by provincial legislatures. Efforts of conservative Indian nationalists to reconcile Mahatma Gandhi and the British government failed upon the former's impossible demands, which included complete self-government, right of secession and general amnesty. The interference of the All-India Conference Working Committee with efforts to compose the situation aided failure of the efforts. Winston Churchill has declared that no parliament would grant India a dominion status. Hence the Round Table Conference called for November will start under poor auspices: Refusal of Nationalists to cooperate or attend, a congeries of mutually hostile delegates, industrial distress in both countries due to boycotts against British goods, and Afridi disorders rampant on the northwestern frontier; an outgrowth of Russian subversive propaganda, hatred of Hindus, and a misunderstanding of the British position in the case.

## II. Western Europe

### D. A. F.

This area includes only two countries which have figured prominently in the news of the day: Switzerland, where the League of Nations Assembly has been in session, and France, which is always in the news.

*The League of Nations.* Keenest interest was centered on the fate of the veteran Briand's plan for the creation of a United States of Europe. The upshot proved that the time is not yet ripe for the project. The plan was finally politely shelved for another year by voting to refer it to a committee for further study. It will probably now descend into the limbo of dead souls, and may never be resurrected. Only a concerted and overwhelming popular demand for it throughout the leading nations of Europe can keep interest in it alive—and so far as is known, there is no evidence of such a demand.

*French Domestic Political Situation.* The repercussions of the astonishing gains by the German extremist parties have been striking in France. The steps taken by the government toward a rapprochement with Germany are now condemned by the press, and special antagonism is expressed toward Briand. Briand's prestige has suffered immensely, and it is very

possible that when parliament convenes he may be forced out of the government.

The French budget has been prepared, showing an increase of seven hundred and twenty-five million francs for military defense and one billion francs for civil expenditures. Decreases in other branches, however, enable the government to point to a net decrease in the total budget of about three hundred million francs. However, the budget does not include the expenses for organizing the defense of the frontiers. It is expected that the Chamber of Deputies will be asked for a vote of confidence upon its merits when Parliament convenes in November.

It is noteworthy that France alone has been spared so far the economic distress prevalent elsewhere. Industrial profits are good; no unemployment, and a huge gold supply. As to this last, France has been drawing in gold for many months past. Can it be that her statesmen are laying up a large reserve for possible war?

*French Army Maneuvers.* This year the French Army held its annual maneuvers as two "fronts" instead of one. Besides the usual battle against an imaginary foe on the eastern front, fifty-five thousand troops went through their paces in the mountains in the south. This was the first time for many years that France has held maneuvers on the Italian border. At the same time War Minister Maginot announced elaborate plans for a completely motorized army.

*Franco-Italian Relations.* Naturally, these maneuvers of French troops on the Italian border did not make for any better feeling between France and Italy. Nevertheless, France does not want war, and it is most doubtful whether Italy under present economic conditions can afford to fight. Italy is in the position of an aggressor in words, but these words are heavily discounted by those in a position to know.

Meanwhile, discussions in an effort to arrive at a naval agreement have come to no useful end. A new conference on disarmament is due early in November, but it will be hopeless unless Italy and France can compose their differences.

### III. Central and Southern Europe

#### R. P. O.

Including as it does Germany, Yugoslavia, and Italy, in addition to Austria, Czechoslovakia, and Hungary, this area is one which is, and will be, continually of deep interest and significance.

*Germany: The Elections, and Thereafter.* By the time this number is in the hands of the readers, the political situation may have cleared; at the present writing all is in turmoil, and prophecy is hopeless.

The elections of September 14 brought startling gains to the two extremist parties, the Communists and the Fascists. Together, they master forty per cent of the Reichstag against any center coalition. Negotiations

are now going on secretly by which the premier, Bruening, hopes to create a coalition of more moderate groups and continue his government. His difficulties are enormous.

In the meanwhile, the Austrian Hitler, at the head of the Fascists, clarified his political platform in evidence at a trial in Leipzig. He would gain power by constitutional means, then scrap the Versailles treaties and the Young Plan, and prepare for hostilities.

It is useless to discuss further the German situation at the present moment.

*Italy and Jugoslavia.* In the early part of September, four Italian subjects of Jugo-Slav blood and sympathies were executed as terrorists. This incident brought almost to the boiling point international feeling between Italy and Jugoslavia; feeling that long had been seething and brewing trouble.

Jugoslavia never has forgiven Italy for blocking of the former's desires to obtain adequate seacoast along the Adriatic, especially Fiume, whereas Italy regards the Adriatic as properly an Italian lake. Jugoslavia charges Italy with systematic terrorism, imprisonment of twenty thousand Croats and Slovenes, the murder of two thousand more, and plunder and burning of schools, libraries, and the like.

The aforementioned executions were followed by anti-Italian mass meetings throughout Jugoslavia and bitter comments in the press, yet the feeling there actually appeared to be calmer than in Czechoslovakia, Jugoslavia's ally in the Little Entente. In the latter country, feeling and speech were so bitter against Italy as to draw official protests from the Italian government.

Italy has announced reorganization of the Fascist army and is supported by Hungary; Jugoslavia has the support of her allies in the Little Entente and of France. For the present, war seems most improbable, but friction doubtless will continue.

In the meanwhile, there are evidences of internal strain within the Fascist group. Dino Grandi, minister of foreign affairs, seems to have been relegated to the background, and Turati, the Secretary General of the Fascist party, has been replaced by Giuriati, a more pronounced militant.

#### IV. Eastern Europe

G. M. B.

*Poland: Internal Political Situation.* From Poland come reports of legislative difficulties. Late in August, Marshal Pilsudski, "the Iron Man of Poland," was not pleased with the running of affairs, so Prime Minister Witos resigned because the affairs of the State were "too much for his health." Pilsudski immediately took over the government. It was not long before fireworks started in the Sejm, Poland's lower legislative house. The dictator is a bitter enemy of this legislative body. On September 10th

the Marshal jailed eighteen of his political foes, including the former Prime Minister Witos. This coup was intended to paralyze Pilsudski's opposition in the coming elections on November 16th. Such high-handed methods are characteristic of the militant dictator of Poland.

*Russia: Internal and External Economics.* The outstanding feature of interest in Russian affairs at the moment is the government's effort to carry out the "Gosplan," or five-year scientifically planned progressive industrial and agricultural increase. Almost two years have passed, and to the astonishment of the world Russia has in some branches actually surpassed the planned production for the period, in other branches has achieved its end, and in only a few has fallen below. The Russian leaders are exerting every effort to keep production steadily increasing up to the percentages planned, thinking the justification of the Bolshevik brand of Communistic government depends upon their success. The outside world, at first inclined to jest at the trial of planned production in a country the size of Russia, is now startled at what has been accomplished, and fearful of what lies in the future.

Within the last few days the world has had a foretaste of what may happen if Russian success continues. Millions of bushels of wheat have been offered at prices radically below the current quotations; the Chicago grain market has been thrown into chaos; the Canadian pool, holding a huge quantity of wheat at higher prices, sees no prospect of unloading, and the European markets are disorganized. With their low cost of production and standard of living the Russians can put their immense harvest on the market far below a profitable price for American and Canadian growers. When they produce a surplus of other goods—now timber, oil, flax, barley, but perhaps in a few years manufactured articles—these, too, will reflect in a low price the low living conditions and cost of production in Russia. It is a startling prospect.

In the meanwhile, loud complaints of Russian marketing methods are raised. Critics and sufferers say that the Russians are selling in order to increase economic distress and help the forces of discontent. A more reasonable view is that the Russians sorely need credit to pay for their large imports of machinery and manufactured articles, and that the Russians are marketing hastily their most easily obtained current assets to get this capital.

## V. The Balkans and the Near East

D. H. B.

Outside of the human interest in the effort of King Carol to solve his marital, political, and economic difficulties in Rumania, the chief development in this area is to be found in the meeting of the Turkish Assembly at Angora.

*Turkey: Internal Political Situation.* On September 25th, the Premier,

Ismet Pasha, submitted his resignation to Mustapha Kemal Pasha. It is expected that Ismet will be reappointed, charged with the duty of appointing a new cabinet. In the Assembly, however, an opposition party under the leadership of Fethi Bey has taken its seats and has opened already a sharp attack on Ismet Pasha and his policies.

Up to this time, the Angora Assembly has been a one-party parliament: now, with Kemal's approval, opposition is permitted, and, apparently, going to be encouraged, Kemal seems to believe that the time has come for the Turks to take one more step toward grafting western ways on to Turkish institutions. How the scheme will work out remains an interesting problem.

## VI. The Far East

R. E. B.

*China's Internal Struggles.* The Chinese situation shows decided changes in the past few weeks. The Nationalist armies, after being hard-pressed by the forces of Generals Yen and Feng, finally under the personal leadership of Chiang Kai-shek forced back the "rebels" north of the Yellow River. Chiang's victory was in large measure due to his control of some of the great sources of China's income, notably the part of Shanghai. With money he has been able to improve the technical equipment of his armies, and also, very probably, to bribe no inconsiderable portion of the Yen-Feng troops.

During the whole struggle, both sides have tried to enlist the aid of Chang Hsueh-liang of Manchuria. The Manchurian overlord had to move warily, for a complete defeat of Yen and Feng would probably mean that the Nanking government would next demand actual control instead of nominal sovereignty over Manchuria. But if he were to aid Yen and Feng, he might unnecessarily exhaust his resources and accomplish nothing. There was also the fear that if he went south of the Wall with his armies, the Russians would grasp the opportunity to interfere. The situation called for all the intrigue and finesse for which the Chinese are famed.

When the Yen-Feng alliance troops were obviously defeated, and not before, Chang moved southward, occupying without resistance Peiping (Pekin) and Tientsin. He announces that his purpose is to enforce peace: that result will probably come for the present, but the Nationalist government has every reason to be deeply suspicious of his ultimate ends. Yen's troops have been allowed to retire intact into Shansi province, and in a few months of reorganization will be ready to enter the arena again—on which side remains to be seen. It is most difficult for a western mind, accustomed to more direct methods of action, to solve the problem of Chinese political maneuvers.

# COAST ARTILLERY ACTIVITIES

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### Comments on the Joint Antiaircraft-Air Corps Exercises at Aberdeen

After a study of the report of the Board on the Joint Antiaircraft-Air Corps Exercises held at Aberdeen Proving Ground during the period May 12-17 the following comments were made in the office of the Chief of Coast Artillery:

The exercises were of great value in determining the details of method and procedure necessary in developing the tactics and technique of joint antiaircraft defense by the Air Corps and the antiaircraft artillery. An organization was also developed for an intelligence battery, which, with the methods and equipment finally employed, transmitted early information of aerial enemies to the headquarters of the area defended, thus permitting air units of the defense to take off and attack hostile air formations before the latter reached their objectives and also giving antiaircraft artillery ample time to take such formations under fire when within range.

The exercises proved that first reports of enemy planes should originate at stations approximately one hundred miles distant from landing fields of defensive pursuit aviation, and that these should be followed up by reports from closer belts of stations, intermediate stations being about eighty miles, and near stations about forty-five miles distant; subsequent information would ordinarily emanate from aerial patrols and stations in the tactical chain of the antiaircraft artillery. The desirable density of observation stations in such a system depends on the locality, the number of suitable civilian agencies which can be utilized, and the extent of air patrolling. Stations about five miles apart appear proper.

Although information transmitted by radio was received later than

information by wire and although considerable interference was encountered, yet it is believed that communication from far distant stations should be by radio, supplemented by information over existing commercial lines. Otherwise a prohibitive amount of wire in the system would be necessary.

Information from stations one hundred miles distant affords planes on the ground time to get ready and take off on receipt of information from the eighty-mile belt which usually will indicate direction of approach of hostile flights. It is practicable to maintain radio telephone communication from the ground with planes in the air. Information from the forty-five-mile belt will enable them to combat the enemy when about thirty miles distant. Such a system is much more effective in providing intelligence of hostile planes than a system of aerial patrols; however, it should be supplemented by the latter.

Early information is also useful to the antiaircraft artillery, which will have ample warning, sometimes from thirty to forty-five minutes, of hostile approach in the air, and will be able to pick up hostile formations and take them under fire with the most advanced antiaircraft artillery elements.

It is believed that an intelligence organization, organized and equipped as suggested by the Board, would prove to be an effective unit for providing timely information, thereby permitting air units to take an effective part in antiaircraft defense. Such an organization should not be made an organic part of an antiaircraft artillery brigade. In the combat zone it would usually be out of place. On the other hand many of them might be required in the defense of an important rear area. An army might need none or several. In the joint air defense of important localities in the zone of the interior such organizations might be employed but with greatly reduced personnel. In such localities maximum use would be made of civilian agencies. In any event the principal uses for such a unit would be in rear areas of the theater of operations and in the zone of the interior, and for these reasons it is believed that a pool of such units in the G. H. Q. Reserve would be better suited to meet the requirements of varying situations than their incorporation in antiaircraft artillery brigades.

Principles have been developed and valuable lessons gained in this exercise which should prove of great assistance in developing antiaircraft defense plans of Corps Areas and Departments.

In this exercise the sector defended was a very limited one and while the exercise extended over a period of six days it was divided into phases of activity which were all of comparatively short duration. These features

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\* See page 327, COAST ARTILLERY JOURNAL for July, 1930.

greatly favored the observers and should be taken into account in evaluating the lessons gained from these tests.

It is recommended that a test of an intelligence system for use in anti-aircraft defense of an important locality be held in the continental United States during the calendar year 1931. These exercises can be made the means of further study as to the organization of an anti-aircraft intelligence unit with the particular point in view of determining what arms or services should comprise such an organization.

### Minor Joint Army-Navy Exercises

Arrangements are now being made for the usual joint Army-Navy exercises to be conducted during the coming summer and fall. The Navy Department will be consulted as to the practicability of conducting exercises in the Third Corps Area during the month of May when the Scouting Fleet will be in the adjacent waters. Plans are as yet in a formative state but if no changes are made it is probable that the Third Corps Area Exercises will be conducted in the Harbor Defenses of Chesapeake Bay. Navy Department approval having been obtained, the plans for the exercises will be prepared jointly by the Corps Area Commander and the Navy Commander.

It is also contemplated holding joint exercises on the Pacific Coast, either at Puget Sound or San Francisco. These plans depend upon the itinerary of the Battle Fleet and may occur at any time during the summer or fall. The Corps Area Commander of the Ninth Corps Area will decide upon the place where the west coast exercises will be held and also as to the period during which they will be held. As is customary in joint exercises the plans for them will be the result of joint approval by the Corps Area Commander and the Naval Commander concerned.

### Distribution of Coast Artillery Personnel

The following table shows the distribution of Coast Artillery personnel among the various combat units—Philippine Scout, commissioned and enlisted personnel is included:

	<i>Officers</i>	<i>Enlisted Men</i>
Active harbor defenses .....	250	5,863
Caretaking detachments .....	30	522
Antiaircraft units .....	162	4,022
Mine planters .....	8	189
Tractor-drawn artillery units .....	51	1,678
Railway artillery units .....	31	749
Total .....	532	13,023

There are nine hundred and ninety-three officers in the Coast Artillery Corps.



### **Test of Director T-6**

The new director T-6 (Sperry) was designed for use against ground targets as well as aircraft. In this connection the word "ground" is used to include both naval and terrestrial targets. There is no question but that the rapid firing antiaircraft gun could execute considerable damage against small boats, transports, and even destroyers and light cruisers. The gun itself may not be exactly suitable for both aerial and ground targets but it is believed that the Ordnance Department has not yet rejected the idea of a light gun (field gun) capable of use against both kinds of target.

The Field Artillery is confronted with a considerable problem by the development of mechanised forces. What methods will they use? Will it be necessary to come to the use of more complicated position finding instruments than has been used by the Field Artillery heretofore? The success of the T-6 director against water targets may have some bearing on their problem.

However, the new director T-6 has not been tested against a water target. Arrangements for the test have been made and will be conducted at Monroe during the latter part of October (Results could not be obtained in time to publish in this number of the JOURNAL).

Three officers and thirty-five enlisted men of the 69th will leave Aberdeen on October 20, and proceed to Fort Monroe where the tests will be conducted before the Antiaircraft Board. Two guns (M3), an instrument trailer with director T-6, and the necessary motor transportation will be taken by the 69th detachment. The movement is necessary due to the lack of a suitable range at Aberdeen. The detachment will return to Aberdeen about October 31.

### **The Coast Artillery Reserve, Second Coast Artillery District, 39 Whitehall St., New York**

*Personnel*—The problem of building up the personnel is one that confronts all organizations with the exception of the 621st C. A. This regiment is located at Wilmington, Del., and a large percentage of the graduates from the University of Delaware are assigned to it. Particular attention has been directed toward obtaining from every practicable source officers who could qualify for Coast Artillery. To this end, last year a special school was conducted to enable those desiring to transfer from other branches to obtain certificates of capacity for transfer. This school met with a reasonable success. At present there are one hundred and eighteen (seventy-nine of whom are enlisted reservists) taking part in the troop schools and extension school in an effort to qualify for commission. Every effort is being made to encourage the aspirants, but those finally obtaining their commission will not be sufficient to materially answer the demand for officer personnel.

<i>Organizations Regiments</i>	<i>Authorized Strength</i>	<i>Actual Strength</i>	<i>Shortage</i>
502nd (AA) .....	63	31	32
513th (AA) .....	63	15	48
514th (AA) .....	63	49	14
521st (AA) .....	63	51	12
522nd (AA) .....	63	24	39
530th (AA) .....	63	25	38
533rd (AA) .....	63	40	23
539th (AA) .....	63	34	29
602nd (Ry) .....	73	35	38
607th (TD) .....	81	31	50
619th (HD) .....	50	30	20
620th (HD) .....	40	20	20
621st (HD) .....	48	48	0
908th (AA) .....	63	23	40
909th (AA) .....	63	33	30
910th (AA) .....	63	23	40
Total .....	985	512	473

Of the three possible sources of officer personnel, the C. M. T. C. at Fort Hancock, N. J., graduated twenty-seven Blues in 1930. They form a part of the one hundred and eighteen trying for commission. The only Coast Artillery R. O. T. C. unit contributing directly to the Metropolitan Area is at Fordham University, New York City. This unit has not been established very long and last year fifteen graduates were or will be contributed to the Reserve officer personnel. In addition to this R. O. T. C. unit, many graduates from other units come into the Second Corps Area for business reasons. Every effort is made to encourage these young men to take an active part in the work and many very fine young officers are coming to us from this source. Every organization is taking up as a major problem the exploitation of every reasonable source for increasing its officer personnel and the end of the year promises encouraging results.

*Enlisted Cadre*—In a letter October 29, 1930, The Corps Area Commander brings attention to the problem of filling the vacancies in the cadre strength of the regiments. The total strength of all cadres is now eighty-nine, whereas the authorized cadre strength of five per cent is one thousand two hundred and thirty-two. To secure the personnel to fill the vacancies is a real problem in view of the fact that limited appropriations make it quite impossible to hold out any inducement in the way of active duty training to our enlisted personnel except at their own expense. Most of those now in the enlisted Reserves have in mind ultimately securing their commissions, and are giving little or no thought to their position in the enlisted cadre. Attention will be given this year to enlisting more men for our key positions. This lack of means to build up the enlisted cadres and train them is more serious than at first is apparent. Many excellent

prospects for commission as Reserve officers could be obtained, if there was only some way to give them training as enlisted men. When they learn that at present this training can be given only through the C. M. T. C. or National Guard, and the young man is shown the advantages of these means of training, in some cases he elects to take the training, but in the vast majority of cases both means are not acceptable. To the officers of each regiment are known a great number of men who would join regiments as enlisted reservists if there was any chance of training with the regiment as a unit, and to join in the spirit of the organizations. The Troop Schools and Extension Schools are open to these men, but it is very difficult to get very enthusiastic over a gun or a piece of complicated fire-control equipment by working at drawings and pictures that do not mean any too much even to those who have actually had experience in handling the materiel. Those who are responsible for the five per cent cadre strength must have had in mind that the enlisted cadres would form an important source of obtaining Reserve officers.

*Instruction*—The publication of the text, Gunnery, Fire Control and Position Finding for Antiaircraft Artillery, and the courses in the Extension School to go therewith, have created a great deal of interest in the instruction to be given this year in both the Troop School and Extension School. Eleven of the sixteen Reserve regiments are antiaircraft and prior to the present school year it has been very difficult to organize the training in such way as to make the members of the regiment take the interest in gunnery that is now assured. The courses of instruction for other than antiaircraft have been more satisfactory to the student and the need for instruction material has been reasonably met.

*Extension School*—At present the enrollment of active students in the Extension School is four hundred and eight-seven (487). Of this number thirty-nine are civilians, seven of whom are graduates of C. M. T. C., and seventy-nine enlisted reservists, fifty-one of whom are graduates of the C. M. T. C. This leaves three hundred and sixty-nine Reserve officers out of five hundred and twelve, as actively taking up the Extension School work, or approximately seventy per cent. This percentage will be increased during the month of November, it is felt, to at least eighty per cent. During the school-year 1929-1930, there was by far the greatest enthusiasm and results therefrom of all previous years. So far this year there are forty-five per cent more enrollments and seventy-five per cent more courses completed than at the same time last year.

*Troop School Activities*—At the Troop School meeting in the Engineering Societies Building, New York City, on October 20th, the attendance was about sixty per cent of the officer personnel located in what is known as the Metropolitan Area. The general assembly of all the officers followed by the Troop Schools was full of the finest spirit. Short addresses were made by Brig. Gen. H. J. Hatch, the District Commander, Brig. Gen. H. S.

Borden, CA-Res., and Col. F. W. Stopford, the Executive of Coast Artillery Reserves, Second Coast Artillery District. We are particularly fortunate in being permitted to enjoy the cooperation of the Engineering Societies of New York. They have each year placed at our disposal their excellent assembly rooms, and all organizations are particularly grateful for this patriotic courtesy.

*Coast Artillery Association.* One of the subjects under discussion at the Troop School in October was the Coast Artillery Association. Nearly one hundred per cent of those present had either signed their application for membership or stated they intended doing so as soon as the forms had been received. Forms are now being distributed to all those desiring them and there is every indication that the organizations in the Second Coast Artillery District will meet with the expectations of the most enthusiastic supporters of this new effort to bring about an Association that will be an important element in building up a high esprit among all Coast Artillery officers, be they of whatever component of the Army.

*Spirit of Cooperation*—There is a growing spirit of cooperation among the three components of the Coast Artillery. The National Guard regiments of Artillery have been very courteous in extending the facilities of their armories to the Reserves wherever and whenever practicable and the Reserves are appreciating more and more their obligations to the National Guard in the matter of encouraging enlistments in the Guard.

The relations between the Regular Army units and the Reserves, who have trained with them, is particularly sympathetic. Unfortunately, Fort Hancock is rather inconveniently located, but this in part is made up by the cooperative spirit of the officers and men stationed there who extend every courtesy and every facility to all Reserve officers who visit them at any time. Most of the officers of antiaircraft regiments have had contact with the 62nd C. A. (AA) in camp where the most helpful and cordial relations existed. The 62nd, which is stationed at Fort Totten, has not rested contentedly with this situation, however, and has extended overtures of its fine spirit to all regiments. A recent evidence of this fine feeling on the part of the 62nd was the entertainment at the Halloween dance on October 31 of all Reserve officers of Coast Artillery. It was a wonderful party and showed that the 62nd can shoot something besides the AA gun.

*Active Duty Training*—Plans for active duty training next year are well under way and it is hoped that definite news of them may be published next month.

*Missions*—In addition to our regular training missions, we have certain definite things to do in this Corps Area requiring the active interest of every person connected with the Coast Artillery Reserves here:

- 1st. Increase our enlisted men for the key positions.

2nd. Increase our commissioned personnel by greater help to those preparing for examination.

3rd. Help the National Guard of your community by presenting the advantages of training therein, on every possible occasion.

4th. Finish the Extension School course you have started.

5th. Understand that our five hundred and twelve officers are greatly unbalanced in grade and work for your promotion to be one of those captains so badly needed to make a proper balance.

#### *The 621st C. A. (HD)*

The annual regimental dinner of the 621st Coast Artillery was held at the DuPont Biltmore Hotel, Wilmington, Delaware, at 7:00 p. m., on October 14, 1930. About twenty-five were present and a most enjoyable evening was had by all present. Capt. E. B. Berl, Regimental Adjutant, acted as toastmaster and the regiment had as its guests Col. Colin Bell, Mr. George M. Davis, and Capt. J. Paul Heinel, the latter representing the Delaware National Guard.

#### *The 513th C. A. (AA), 514th C. A. (AA), 522nd C. A. (AA)*

A recruiting campaign was started in September by the circularization of five hundred American Legion Posts in all parts of New York State outside of the Metropolitan Area. At the same time two releases were mailed to each of one hundred and thirty-five newspapers, of more than two thousand circulation each, in the same area. The imposition of a maximum age limit of thirty for appointment as second lieutenants in the Coast Artillery Reserve came just as the campaign got under way and eliminated practically all World War Veterans as prospects. However, many replies were received and altogether the clerical work involved in answering and following up inquiries was very heavy. As was to be expected, the actual results were relatively trivial because of the requirements for eligibility.

At the end of October, through the courtesy of the Chief of Staff of the 98th Division, practically all first and second lieutenants of that division were notified by circular of the opportunity to transfer to the Coast Artillery (Antiaircraft) Reserve. Replies to date number nearly twenty.

In proportion to the efforts expended, by far the best results in recruiting have been obtained right here in Schenectady through personal activity of Reserve officers of the 514th Regiment. All the applicants are of a high type and will be distinct assets to the Coast Artillery Reserve in peace or war.

The 514th Coast Artillery (Antiaircraft) held its first Troop School in Schenectady on October 14. There were over forty-three present and the instruction was well handled by Reserve officers. An innovation that proved very popular was a social session with refreshments after the meeting.

The second meeting was held on October 28 with forty-one present.

This meeting was primarily for the benefit of new officers and applicants for commission and was featured by stereopticon views of the activities of the regiment at Aberdeen last summer. Major Devereux, the Regimental Commander, came all the way from Utica for both meetings, bringing Captain Fleck, the Regimental Executive, to the second meeting, while on both occasions Reserve officers were present from other cities of the Capitol District.

The Unit Instructor has started weekly meetings in Schenectady for those who can attend that often. Due to the peculiar conditions in this city, where most of the Coast Artillery Reserve officers are taking educational courses with the General Electric Company in addition to their regular work, only a small proportion of the personnel of the regiment can be expected to attend meetings oftener than once a month, but the experiment of weekly meetings will be pushed energetically and it is hoped that the plan will meet with all the success that can be expected under the existing limitations.

The Unit Instructor will hold the first Troop School meeting of the 522nd Coast Artillery (Antiaircraft) in Buffalo and Rochester on November 7 and 8, respectively. This season, for the first time in years, the 522nd will have monthly Troop Schools in those cities. The Unit Instructor will be present at but three of these school sessions; the remainder will be conducted entirely by Reserve officers.

The Extension School season has opened with bright prospects.

New rosters have been published completely reorganizing the 514th and 522nd Regiments with a view to placing more responsibilities on Reserve battery and battalion commanders.

The 514th Regiment was well represented at the first general meeting of the season for the Capitol District, held in Albany on October 21.

### **Signal Corps to Use Sound Effects in Training Films**

If the obsequies of Danny Deever had been postponed until today we might have been able to check up on what the Color Sergeant *actually* said to Files on Parade because Maj. C. W. Lewis, Signal Corps, has announced that sound will be used in all future training films produced by the Signal Corps. The recently released antiaircraft training film will probably be revised with sound effect introduced, where practicable. A Signal Corps officer is now in Hollywood for the purpose of studying the technical features of sound pictures. There is still some difference of opinion as to whether the sound should be taken at the same time as the scene is shot or introduced later and synchronized with the action. The latter method will be used on the antiaircraft training films so there will be no opportunity to determine what Colonel Dunn said to his officers just before the battle started. Those who believe he mentioned "too many flies in the kitchens" will not have their curiosity satisfied.

It is obvious that certain types of training films will lend themselves more favorably to sound reproduction than others. For the first time it will be possible to produce a training film for use in "Voice Culture." Reserve officers will be able to hear how a command should be given and arrive at camp with a well-developed "command" voice. The experts state that certain noises do not reproduce well. For instance, the sound of a gun explosion is not very realistic. It sounds more like static. It is possible that it may be necessary to draft Phil Cook to produce the gun fire effects. Maj. C. M. Thiele, 62nd C. A. (AA), will probably assist in the revision of the anti-aircraft film since he had much to do with its making. Sorry to report that there appears to be no chance for a Coast Artillery officer to get a detail in Hollywood. The Signal Corps is reserving this for itself.

### The Coast Artillery School

#### FILL RAZED

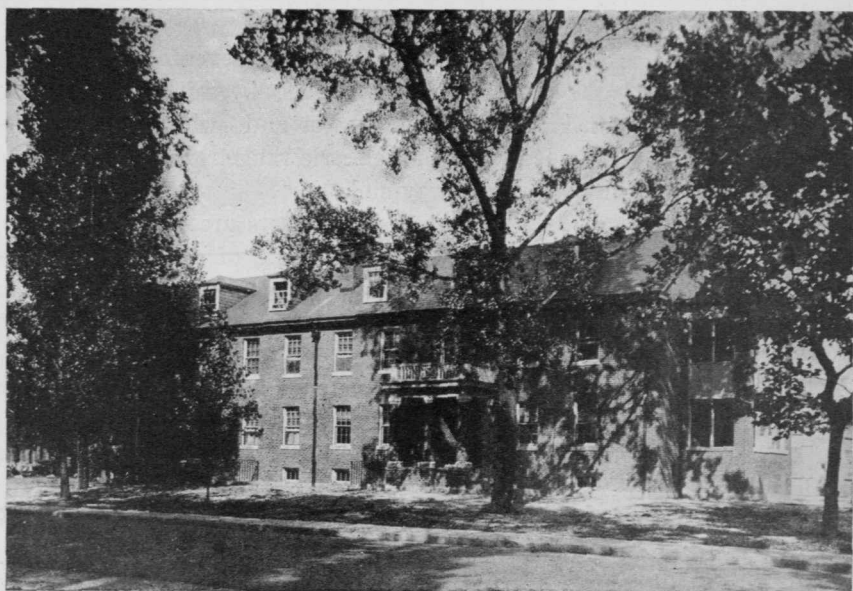
Or such is the title given this article by our esteemed correspondent, Captain Mickelsen, gone tabloid. We looked this title over from all angles.



There appeared to be something wrong with it but we couldn't discover what it was so decided to let it stand. Can a "fill" be "razed"? Mebbeso, mebbeso. We suggest "Fill Fell" as being more tabloid. Maybe you don't know what we are talking about anyway but certainly you remember "Randolph Park." No? Well then you remember the old fill up near

the Mill Creek guardhouse. What we mean to say is that it is no more and we have a picture to prove it. All buildings in this area which formerly masqueraded as officers' quarters have been reduced to kindling wood. Some buildings of the same type which still remain are still being used by enlisted men and their families.

It has been suggested that while these old quarters left much to be desired in the way of comfort they were still a most helpful aid in establishing that close family spirit in the Coast Artillery which is so desirable. There was no late sleeping on Sunday morning if your neighbor decided



to arise during the dog watch. When he shook down his stove you just naturally fell out of bed, or rather, were shaken out of it. "Measles for one, measles for all." One could never really decide whether he was alone in the bosom of his family or attending a community meeting. As for those intimate conversations in which adult members of the family occasionally wish to indulge they were carried on near Crisp Park or even at the Liberty Theater where more privacy existed. But all this is no more because—

New four-family brick apartments have replaced these renowned rendezvous of rats and other rodents. The new apartments do not offer the wide interior vistas to which we have no business becoming accustomed but it is a base libel to state that they do not possess a room large enough in which to spread a nine by twelve rug. To refute these statements we have obtained a few measurements which we will submit in good time.

As stated before these apartments are four-family. Two families on the top floor, one in each end and two on the first floor, one in each end, or



vice versa. In each there are two bedrooms and an Austin nest. The two larger bedrooms are on the end and open out onto a common sleeping porch. The master's bedroom (why do they call it the "master's"? ) is thirteen and one-half feet by ten and a half, which includes the radiator. So cheer up, you can't throw that old rug away yet. The bathroom (seven feet by five and one-half feet) is adjacent to the master's bedroom. The other bedroom is about the same size and adjacent to it is the small room, a little more than nine feet square, which may be used to confine Junior at night or as a study (or for other purposes which suggest themselves). A passage way is provided, behind the entrance hall, to the living quarters.

The living room is fairly large (thirteen feet by seventeen feet). Immediately back of it is the dining room (twelve feet by thirteen feet). The kitchen is provided with an electric refrigerator and—what is that we see against the farther wall? It must be an electric range. The sink is a one-way affair (we vote for higher two-way sinks).

Captain Mickelsen assures us that these quarters are very nice. They have new furniture, modern electrical fixtures and, of course, new floors. They may seem small to some but in these days of "miniature golf, miniature automobiles, and miniature salaries" anything else would be inconsistent and not in tune with the times.

Three of the new apartments are completed, three under construction and three more projected. Many officers now on commutation status in Hampton and Phoebus will be able to move into the post when all are completed.

### **The C. M. T. Camp at Fort Adams**

The Citizens' Military Training Camp at Fort Adams, Rhode Island, opened on July 5 and closed on August 3, with slightly more than a thousand students in attendance. These were distributed approximately as follows: fifty in the Blue Course, eighty in the White Course, two hundred and forty in the Red Course, and six hundred and forty in the Basic Course. The schedule of instruction contemplated basic infantry training for the Basic students and the approximate equivalent of second class, first class, and expert gunner, respectively, for the Red, White and Blue students. For the Coast Artillery instruction, two 155-mm. guns, two 75-mm. antiaircraft guns, and a 12-inch mortar battery were available.

Colonel Fred V. S. Chamberlain, Commanding Officer of the 13th Infantry, commanded the camp, Lieut. Col. John Scott, also of the 13th Infantry, was Executive Officer, Maj. Robert Arthur, Coast Artillery Corps, was Senior Artillery Instructor and in command of one battalion, and Maj. T. K. Spencer, 13th Infantry, was Senior Infantry Instructor and commanded a battalion. The students were organized in a regiment of two battalions, each of four batteries. Four of the batteries were commanded

by captains of Infantry and four by captains of Coast Artillery. Each Coast Artillery captain had an Infantry lieutenant, and each Infantry captain had a Coast Artillery lieutenant. Reserve officers detailed to the camp, completed the battery and staff quota of officers.

From an organizational point of view, the arrangement was excellent and permitted of the most ready separation of batteries into groups receiving artillery instruction and groups receiving infantry instruction, each with a field officer in charge. From an administrative point of view, the camp was predominantly infantry, but that, in a way, was advantageous. The enlisted details for the infantry instruction and for most of the administrative work came from the 13th Infantry and the enlisted details for the coast artillery instruction came from a detachment of the 11th Coast Artillery, sent to Fort Adams from Fort H. G. Wright for the purpose of assisting in the camp.

Upon their arrival, students were met at all railroad, bus, and steamship terminals and conducted directly to the processing plant where, outwardly, they were changed from civilians into soldiers. Entering the plant at one end in civilian clothes, they stripped, were examined physically, had their personal records made, received assignment to batteries, donned uniforms, and emerged from the other end at the rate of about eighty per minute. After final inspection, they were transported to camp, where they joined their batteries.

In camp, the normal day contemplated reveille at 6:15, breakfast at 6:45, physical training at 7:45, and infantry instruction at 8:15. At 9:15 the Red, White, and Blue students took up artillery training, while the Basic students continued on basic work. Dinner at 12:00 was followed by gunners' instruction at 1:00 for the Red, White and Blue students and by athletics at 2:00 for everybody. Parade at 5:15 closed the working day, and taps, at 10:00, found most of the students already in bed. This daily program was interrupted on occasion by instruction in rifle marksmanship, an overnight hike and camp, field day, etc., but in general it formed the basis of instruction. Dances, passes to Newport, target practice by the G. P. F.'s, competition for and the award of prizes, boxing matches, and visits by celebrities added to the interest of camp and caused the time to pass quickly.

As a site for a C. M. T. Camp, Fort Adams has many advantages. Scenically, it presents a view unsurpassed by any other available post. The harbor is at all times filled with warships, commercial boats, yachts, sailboats, and motorboats of all descriptions, and the post itself, surrounded by water on three sides is open to whatever breeze may be blowing. However hot the day may be, the night is sure to be cool.

Insofar as equipment goes, no C. M. T. Camp has a better plant. The tent floors are laid on concrete piles and the latrines and washrooms are of permanent installation. The mess hall and kitchen, however, is the

pride of the camp. Equipped to care comfortably for nine hundred and fifty students, four mess halls are provided in the form of the arms of letter H, with the kitchen forming the cross bar. The kitchen is laid out with sufficient symmetry to care for all mess rooms simultaneously and the arrangement is such as to reduce labor to a minimum. Every possible convenience is provided. Bread is cut by electrical means, potatoes are peeled by machinery, and dishes are washed mechanically at the rate of five hundred pieces per hour. With such equipment and with an experienced mess officer, it is not a matter of surprise that the mess was of the very highest order in every respect.

The central location of Fort Adams and its short distance from New England centers of population may be considered an advantage or a disadvantage, depending upon the point of view. More than thirty thousand visitors came to Fort Adams during the camp. Many of them came from some little distance and brought lunches with them. The result was that an excessive amount of police was required, the American public being what it is. While, in a way, it may be desirable to permit parents and friends to witness the care and training the boys receive, I personally do not consider ease of access an essential factor in the choice of a camp site.

Another factor which can scarcely be considered an advantage is the close vicinage of the city of Newport. This required a system of passes which increased the amount of administrative labor, and, since passes were restricted in number, it was found that if the boys cannot visit the girls, the girls will visit the boys. This is not only unnecessary during the period of the camp but it is also another source of increase in supervisory labor.

The one distinct disadvantage which is encountered at Fort Adams is fog. While less than in previous years, there was sufficient fog to be disagreeable, and few nights were so dry that clothing was not damp on the following morning. The target practice by the G. P. F.'s was the first in three years, and lack of visibility prevented firing the antiaircraft guns as scheduled.

Despite minor disadvantages, the camp was one of the most successful it has been my fortune to attend. Discipline was excellent, morale was high, the instruction was fully up to expectations, and the administrative and battery officers possessed the full confidence of the students. At the close of camp, the students, save perhaps those who were not recommended for further training, left for their homes with the feeling that they had had a profitable, instructive, and enjoyable four weeks in camp.

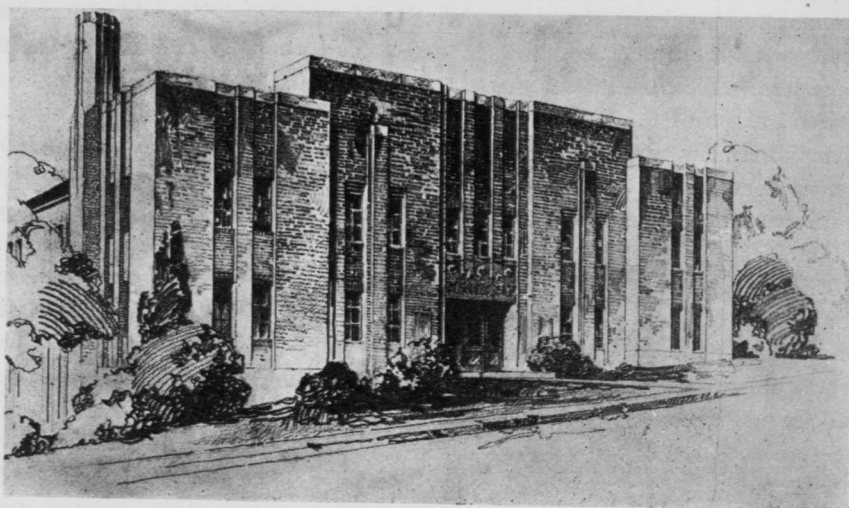
### **New Armory for 213th Coast Artillery at Bethlehem**

After many, many years of interesting and eventful military history, the city of Bethlehem, Pennsylvania is, at last, to have a State Armory. It is completely erected and will be dedicated with appropriate ceremonies on December 6, with Maj. Gen. Wm. G. Everson, Chief of the Militia

Bureau as the principal speaker. Other notables on the program are Maj. Gen. Wm. G. Price, Jr., commanding the 28th Division, and Adjutant Gen. F. D. Berry of the State of Pennsylvania.

The armory is named in memory of Corp. Floyd J. Simons, the first National Guardsman of Bethlehem to be killed in the World War. Corporal Simons met death in the Champaign Sector. It is located at Second and Prospect Avenues, one of the most beautiful and convenient corners in Bethlehem. This site was donated by the city a few years ago.

The plot of ground is one hundred by two hundred feet. The armory



is placed at the extreme northwest corner of the lot. Provisions were made by the city to cut off the sharp turn at this corner moving the curb and sidewalk back and this work is now completed also.

The armory is designed to serve as an administration building, drill hall, garage and recreation center for Battery "C," 213 C. A. (AA).

The building is of concrete, brick and steel, approximately seventy-six by one hundred and twenty feet in size, with the main entrance on Prospect Avenue. The main entrance opens into a lobby from which stairways give direct access to the administrative offices on the second floor and to the basement. The main floor or drill hall is a clear unobstructed space about seventy-four feet wide and one hundred and ten feet long with doors opening into the lobby and emergency exits located at the rear and along one side.

In the basement there is pistol range, boiler room and coal storage, supply room, locker rooms for the men and noncommissioned officers, toilet and shower room, recreation room and kitchen and a large garage. Due to the drop in grade along Prospect and Second Avenues a large part of the basement receives direct light. The garage located along the south

end of the building is on a level four feet below the main part of the basement. One section of the garage will be used as a work space for repairing motor equipment. At the rear of another section there is a loading platform on a level with the supply room from which trucks can be loaded and unloaded.

During its target practice Battery "C" was awarded the "E" for excellence. It reported at camp at Bethany Beach, Delaware, one hundred per cent present as did Batteries "A" and "D," also of the 1st Battalion.

The standing of Battery "C" among the people of Bethlehem is indicated to some extent by the donation of the site for the armory. Many of its enlisted personnel are employees of the Bethlehem Steel Company which has assisted materially in the construction of the armory. This company has contributed liberally in many ways without publicity or ostentation.

All officers of the 213th have had a part in making the Corp. Floyd J. Simons Armory an actuality. Col. C. J. Smith of Allentown, the regimental commander, has taken an active interest in its construction. Maj. J. D. Eisenbrown of Reading, commanding the 1st Battalion, is an energetic officer who is behind every move to increase the efficiency of the 213th and especially that of his own battalion. He believes that the erection of this armory is a milestone in the history of Battery "C" and will be an inspiration to its personnel for still higher accomplishments.

Captain Atwood, and the battery officers, 1st Lieut. Victor Daniel and 2nd Lieut. Wm. J. Souders, extend a cordial invitation to the Regular Army to be present with them on December 6 and celebrate an important event in the history of Battery "C."

The dedication of this armory, while an important event, does not present the spirit existing among the personnel of Battery "C." Ground was broken for the building on June 26. Its rapid construction is due in large part to the interest which every member of the battery has exhibited. This spirit seemed to have been transmitted to the contractors and everyone connected with the building.

Battery "C" is one of the leading batteries of the 213th, a National Guard regiment of the first rank. Under the present battery commander, Cap. L. C. Atwood, it is ranking high in drill attendance and has a waiting list of applicants for enlistment.

### **Harbor Defenses of San Francisco**

In the interests of economy of effort and to comply with the general policy of requiring caretaking detachments to devote their major efforts toward the maintenance of armament and installations out of service, Battery K, 6th Coast Artillery, was placed on the inactive list as of midnight September 30, 1930. Prior to that date, the organization had been assigned to Battery Wallace at Fort Barry, a 12-inch barbette mount,

long range outfit, in addition to caring for the guns and equipment out of service at Forts Baker and Barry.

Battery A, 6th Coast Artillery, augmented by a detachment from Battery E, 6th Coast Artillery, travelled southward to Burbank, California, by truck, leaving Fort Winfield Scott October 5, 1930, to participate in a joint Air Corps-Coast Artillery problem involving the attack and defense of that airport. The organization functioned as a brigade antiaircraft intelligence battery. Capt. William H. Sweet, 6th Coast Artillery, was in command of the battery, and was assisted by 2nd Lieuts. Thomas B. White, Jacob G. Reynolds, and Arthur L. Fuller, Jr., all 6th Coast Artillery. The return journey was completed October 25th. A report of the exercises will undoubtedly be published in the near future.

Captain Sweet and his Battery A cohorts are trying to slip it over on the San Francisco fog and get away with an antiaircraft searchlight practice. Wish him success; the Corps Area training load on the few planes available necessitates that he beat Old Man Weather within a limited time or use owls and pelicans for targets.

Several changes in commissioned personnel have occurred or are about to do so. Lieut. Col. Frank Geere has been on an extended leave of absence, and sails for Honolulu very soon. Maj. Joseph D. Brown is now on leave and is to depart for Panama. Capts. Harold S. Johnson and Clifford D. Hindle have joined the command. Lieuts. William M. Vestal, Jacob G. Reynolds, Kai E. Rasmussen, Hubert duB. Lewis, and Arthur L. Fuller, Jr., sail for Pacific foreign service in November. Incidentally, Lieutenant Vestal has committed matrimony recently, and Lieutenant Reynolds is alleged to have the same idea in mind. Col. Arthur L. Fuller leaves the 9th Coast Artillery District for Honolulu very shortly.

We anticipate with regret the retirement, after sixty-four years of active service, of Brig. Gen. Frank M. Caldwell, the present commander of the 9th Coast Artillery District. We liked him.

The Harbor Defense troops combined with the 30th Infantry on October 22nd in a review for the present Corps Area Commander and the next Chief of Staff, Maj. Gen. Douglas MacArthur. Col. John T. Geary, 6th Coast Artillery, was in command of troops. The formation was followed by a luncheon at the Presidio Officers' Club all officers of the Bay district attending. General MacArthur gave a very inspiring talk prior to the luncheon. His promised support of the pay and promotion legislation should not be overlooked. He is for us.

### **The 13th Coast Artillery (HD), Fort Barrancas**

Following a brief let down after the completion of the summer training camps, training of the regular garrison has been resumed. In accordance with the new peace-time assignment to armament, Battery "A"

mans 10-inch seacoast guns and antiaircraft machine guns, and Battery "B" mans 10-inch seacoast guns and 3-inch antiaircraft guns.

On October 7, 8, and 9, Battery "A," under command of Capt. J. L. Craig, fired practices with the antiaircraft machine guns. In spite of the battery's lack of experience with the guns and the inclement weather that persisted throughout the practice, the firing was exceptionally gratifying. For the three practices fired the scores were 52.11, 62.36, and 56.10.

On October 14 and 15, Battery "B," commanded by Capt. K. C. Bonney, fired practices with the 3-inch antiaircraft guns. Battery "B" has been rated excellent by the War Department for the last target practice season in which they fired as an antiaircraft battery.

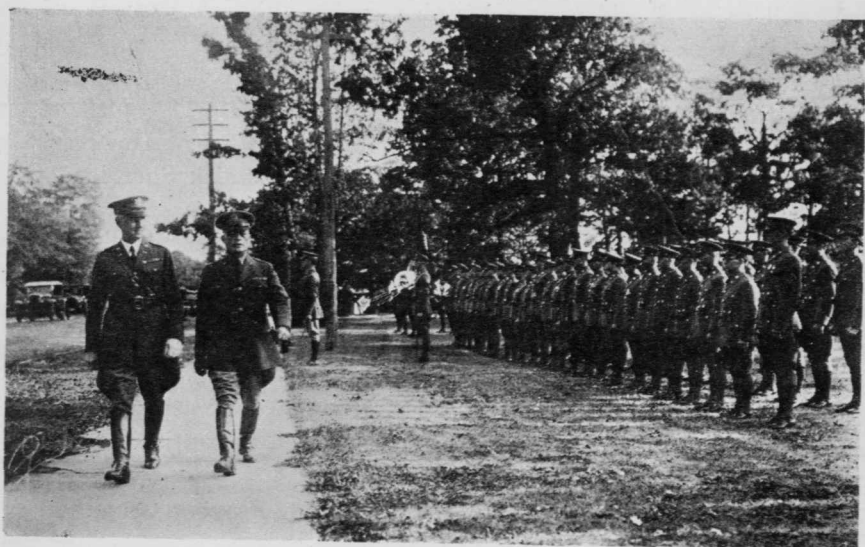
The month was marked by two competitions that created much interest within the batteries. With the objective of stimulating interest in the exact details of infantry drill on the part of all noncommissioned officers to the end that on the arrival of the next summer training camp season a large corps of expert noncommissioned instructors will be available, the infantry drill competition was planned. In preparation for the competition instruction was given at noncommissioned officers' school. Infantry drill movements to be executed at the competition were prepared and kept secret from all the battery personnel. At the time of the competition the first half of the movements were executed by Battery "A" and the last half by Battery "B." Noncommissioned officers who commanded the batteries were chosen alternately from each battery for each movement. Each noncommissioned officer was judged by three judges independently and graded on the quickness with which he grasped the situation, the propriety of his orders, and the soldierly manner in which he handled the command. Battery "B" won the competition by a narrow margin.

The second competition was among the gun crews of Battery "A." When the battery took over the assignment of antiaircraft machine guns several weeks before the firing practice, there was but one man in the battery with machine gun experience. To encourage the training of the men and stimulate interest, it was decided to have the competition between gun crews. The sixteen men forming the crews of four guns were all drilled in each position on the gun. At the time of the competition lots were drawn in each gun crew for the gunner of that crew, and lots were drawn by crews for the guns. Two courses were run with the ordnance officer fixing the guns with stoppages before each course. Firing was at D targets and scoring was based on the time required to place the gun in position and get off a given number of rounds, including the time required to determine and reduce stoppages, and also depended on hits. Members of the winning crew were Corp. W. E. Thornton, and Pvts. E. M. Gatchel, W. C. Hoffman, and T. W. Hamrick. This competition was largely responsible for the excellent scores made by the battery in the practices.

Colonel Francis H. Lincoln is expected to arrive and assume command of the harbor defenses about November 1, relieving Maj. C. K. Wing who has been the Harbor Defense Commander since the departure of Lieut. Col. H. L. Butler in July.

### **The 61st Coast Artillery (Antiaircraft), Fort Sheridan, Illinois**

The 61st has had a very busy time with inspections since the close of the summer training period. General Gulick inspected the regiment during the latter part of September and at about the same time the Chief of Staff, Gen. Charles P. Summerall visited Fort Sheridan and reviewed the troops.



About the middle of October General Frank Parker, the Corps Area Commander, conducted the annual tactical inspection. This consisted of a short road march and a review in column on the road. Following the review the regiment went into position with all communications laid. General Parker was accompanied on his inspection by Col. H. C. Barnes, on duty at Corps Area headquarters with the Coast Artillery Reserve group, and by Lieut. Col. George Wildrick (note the "lieutenant colonel") and Maj. A. G. Campbell, both of the Corps Area General Staff but most indelibly of the Coast Artillery.

General Parker reviewed the entire garrison. Major Cunningham commanded the troops while Captain Marquat commanded the 61st. Colonel Barnes reports that the 61st presented a fine appearance. Following the review the Corps Area Commander inspected the barracks and other build-



ings. He expressed approval of the kitchens, store rooms and day rooms of the 61st which is an indication that the regiment is getting pretty well established.

Early in October the 61st officers were the guests of honor at a dinner given by the Coast Artillery Reserve of Chicago. Colonel Barnes acted as toastmaster.

It seems to be fairly certain that all training will be carried out next summer at Fort Sheridan. The training will begin on June 15 with the R. O. T. C. students and continue until the last of July. Following the R. O. T. C. training will be conducted for Reserve units which formerly trained at Camp Knox. It is probable that three hundred Reserve officers will be trained during the month of August. It is believed that the Reserve will enjoy Sheridan as a training center although Reserve officers from Chicago might prefer a more distant location. It is only natural that a Reserve officer should be more intrigued by the prospect of training at a location more distant from his place of residence. The spirit of the explorer, if not that of the pioneer, still remains with us. However, the Chicago residents appreciate the many advantages which Sheridan offers over Camp Knox and are willing to forego the attraction of traveling to far places. On the other hand officers from distant places will welcome the opportunity to attend a camp located on Lake Michigan and convenient to the large and busy city of Chicago. The JOURNAL will not join in the popular custom of contributing a certain line of remarks whenever Chicago is mentioned. We venture to say that many of the visiting out-of-town Reserve officers will depart from the vicinity next summer without ever hearing the rattle of machine guns, except on the antiaircraft range.

### **The 69th Coast Artillery (AA), Aberdeen Proving Ground**

As these notes are written the station of the 69th Coast Artillery is as represented above but when this issue of the JOURNAL appears the regiment will be en route to its new station at Fort McClellan. Col. J. B. Taylor, the Regimental Commander, made a reconnaissance of a number of routes during the month of October and as a result the following itinerary for the march was recommended and approved.

It is noted that Colonel Taylor chose a route leading through the Piedmont region of Virginia, North Carolina, and South Carolina. It is longer than any of the other three considered but he states that he selected it because the bridges were safer for the heavy equipment. He also avoids the steep grades of the more mountainous regions. The road selected is generally good although between Augusta, Ga., and Milledgeville, Ga., there is one stretch of eighty miles of non-hard surface road. Ample stops are scheduled for the week ends. (Are we mistaken in observing

<i>Total Mileage</i>	<i>Days' Mileage</i>	<i>Camp—Night of</i>	<i>Camp—Location</i>
0	0		Aberdeen Prov. Ground, Md.
105	105	Nov. 13	Washington, D. C.
200	95	Nov. 14, 15, 16	Fort Humphreys, Va.
285	85	Nov. 17	Richmond, Va.
365	80	Nov. 18	South Hill, Va.
440	75	Nov. 19	Raleigh, N. C.
			Aberdeen, N. C.
			Rockingham, N. C.
530	90	Nov. 20	Monroe, N. C.
			Pageland, S. C.
610	80	Nov. 21, 22, 23	Kershaw, S. C.
			Columbia, S. C.
690	80	Nov. 24	Trenton, S. C.
			Augusta, Ga.
780	90	Nov. 25	Thomson, Ga.
			Milledgeville, Ga.
865	85	Nov. 26	Macon, Ga.
			Griffin, Ga.
			Atlanta, Ga.
925	60	Nov. 27, 28, 29, 30	Fort McPherson, Ga.
1,005	80	Dec. 1	Heflin, Ala.
1,025	20	Dec. 2	Fort McClellan, Ala.

that Thanksgiving Day will be a march day?) The itinerary is not hard and fast. No doubt the regimental commander will vary it to suit the convenience of the men and materiel. Twenty night camps are scheduled, but several camps will be more than one night.

The 69th will accept every opportunity to exhibit the equipment at overnight stops and will be anxious to answer questions of interested civilians. The regiment will be reviewed on November 15 by the Mayor of Richmond, Col. J. Fulmer Bright.

### **250th Coast Artillery (Calif. N. G.) Wins McQuaide Trophy**

Now and then the Coast Artillery steps over into the bailiwick of some other arm of the service and beats it at its own game. In such cases it is only natural to call attention to it in a loud voice and do a little back slapping. Such was the case in a pistol shooting competition held September 28, at Leona Heights, Oakland, California, for the McQuaide Trophy awarded by Brig. Gen. R. E. Mittelstaedt, the Adjutant General of the State of California.

The regiment winning the trophy was the 250th Coast Artillery, California N. G., stationed at San Francisco, whose Commanding Officer is Col. Richard E. Mittelstaedt when he is not serving as Adjutant General. General Mittelstaedt's interest in pistol competition is well known. He is

the donor of the McQuaide Trophy. His interest in pistol shooting is contagious which accounts for the large number of excellent shots in the 250th.

The regiment was up against some very stiff competition. Two Regular Army regiments participated—the famous 11th Cavalry and the 30th Infantry. In addition the 159th Infantry, 143rd Field Artillery and the 40th Division Staff (all National Guard units) also participated. The final standing was:

250th Coast Artillery .....	2,152
11th Cavalry .....	2,117
30th Infantry .....	2,003
159th Infantry .....	1,987
143rd Field Artillery .....	1,598
40th Division Staff .....	1,336

Individual scores of the members of the winning team were as follows:

Lieut. Col. David P. Hardy.....	238
1st Lieut. Edward P. Blount.....	225
2nd Lieut. Charles A. Baker.....	207
Sergeant Friedman .....	177
Capt. C. Harris Potts.....	226
Capt. Samuel R. Dows.....	221
Capt. Elmer T. Sprague.....	205
Private Lukes .....	233
Private Hahn .....	214
Capt. Frear Burk .....	206

The McQuaide Trophy will remain in the possession of the 250th for at least one year although the regiment expects to keep it longer.

### **The 252nd Coast Artillery (TD) N. C. N. G.**

The 252nd Coast Artillery (155-mm. TD) comprising all the Coast Artillery troops in the State of North Carolina was in training at Fort Moultrie, South Carolina, from July 13 to July 27, 1930. Of a total strength of sixty-three officers, one warrant officer, and six hundred and thirty-eight enlisted men, there was an actual strength in camp of fifty-nine officers, one warrant officer, and six hundred and fifteen men—a percentage of ninety-seven and six-tenths.

Information has just been received from the Militia Bureau, that for Annual Armory Inspection, 1930, the entire regiment was rated VS, as was each of the subordinate units. Coming on the heels of a change in assignment in November from fixed harbor defense to mobile tractor drawn (155-mm. G. P. F. outfit), the Annual Armory Inspection was exceedingly difficult, but from the remarks made by the Inspector, the Tar Heel regiment has again maintained the splendid reputation it enjoys in the service.

This regiment is commanded by Col. Royce S. McClelland, whose station is Wilmington, North Carolina. Colonel McClelland's staff consists of the

following: Lieut. Col. Robert B. Lewis (Raeford), S-Ex.; Maj. Parran Jarboe (Greensboro), Surgeon; Capt. Andrew H. Harriss, Jr. (Wilmington), S-1 and CO Band; Capt. Julian H. Blue (Raeford), S-3; Capt. Ilbert deLacy Brayshaw (Wilmington), Chaplain; and 1st Lieut. George Sloan, Jr. (Wilmington), S-2.

The organization of the regiments is as follows:

Headquarters, Wilmington; Medical Department Detachment, Greensboro; Headquarters Battery, Wilmington; Service Battery (less band section), Whiteville; Band Section, Service Battery, Wilmington.

First Battalion Headquarters, Wilmington; Hq. Btry. Combat Train, 1st Bn., Raeford; Battery A, Wilmington; and Battery B, Lumberton.

Second Battalion Headquarters, Hq. Btry.—Combat Train, 2nd Bn.; Battery C and Battery D, Greensboro.

Third Battalion Headquarters, Wilmington; Hq. Btry.—Combat Train, 3rd Bn., High Point; Battery E, High Point; and Battery F, Raeford, N. C.

Major Franklin Kemble, C. A. C. (D. O. L.), with headquarters in Wilmington, N. C., is the Senior Instructor. Major Kemble came to this regiment in September, 1929, from a tour in Hawaii. He relieved Maj. Clarence T. Marsh, now a student in the advance course, Command and General Staff School, Fort Leavenworth, Kansas.

# PROFESSIONAL NOTES

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## Course for Stereoscopic Observers

The stereoscopic observer is probably the most important man in an antiaircraft gun battery. To become proficient on the stereoscopic height finder it is necessary that operators receive intensive practice on the training instrument and on the height finder itself. Even with intensive training he may never become a satisfactory stereoscopist. It appears that when he is good he is very, very good and when he is bad he is useless.

The difficulty of obtaining suitable operators was realized before the adoption of the stereoscopic height finder. Capt. B. F. Harmon stated in an article appearing in the JOURNAL that it could reasonably be expected to find about six out of one hundred men suitable for training as observers. Some officers have argued that such a low percentage of possible operators, the intensive training required of those optically qualified, and the usual lack of instructors in time of war are sufficient reasons to disapprove the adoption of the stereoscopic instrument as standard. However this may be, the stereoscopic instrument is now standard and when some one has a better system the JOURNAL would be very glad to publish it to all its readers.

At the present time there is a serious shortage of qualified stereoscopic operators in the antiaircraft regiments. To correct this condition the Chief of Coast Artillery proposes that a training course for stereoscopic observers be established in the Department of Enlisted Specialists at the Coast Artillery School and that two enlisted men from each antiaircraft gun battery, twelve in all, be ordered to Fort Monroe for the course beginning December 1, and continuing for about three months. It was found advisable to conduct this course at the Coast Artillery School, principally on account of the shortage of training instruments and competent instructors with the regiments. In this connection Sgt. W. S. Allen, 61st C. A. (AA), is rated as the best qualified stereoscopic observer in the Coast Artillery—or in the world, for that matter. He will be detailed on temporary duty as instructor in the course.

## Study of Antiaircraft Organization to Be Made at School

The subject of antiaircraft troops with divisions, corps, field armies, and G. H. Q. reserve has been one which has received considerable study in the service schools and by officers interested in the problem. It is generally conceded that one antiaircraft regiment for the corps is insufficient to furnish a reasonable defense. Some officers anticipating increased harassing efforts of attack and bombardment aviation against infantry troops—especially when on the march or bivouac, have proposed that antiaircraft organizations be made an organic part of the division. The organi-

zations proposed as organic for the division have been various. One recommended a mongrel battalion consisting, in the main, of a searchlight platoon, a gun battery, and a machine gun battery. Another proposed no gun batteries but insisted that the division needed an anti-aircraft machine gun battalion. Others have maintained that the division needed no organic anti-aircraft artillery, that anti-aircraft fire can best be coordinated in the corps, and that divisions acting alone can always be provided with anti-aircraft artillery by attachment.

It now seems that the last mentioned opinion will prevail. Recently the Chief of Coast Artillery has referred the subject to the Coast Artillery school for additional study with particular reference to the use of an anti-aircraft brigade with each corps. A brigade of three regiments will be considered in this study although the two-regiment brigade will probably be favored. It is particularly desired that the study include the preparation of tables of organization for the headquarters and service units which would be necessary in a brigade organization and such changes as might be desirable in tables applying to sub-units of the regiment. While this study may include consideration of a brigade intelligence battery it is to be made with particular reference to ammunition supply and suitable organizations to insure it.

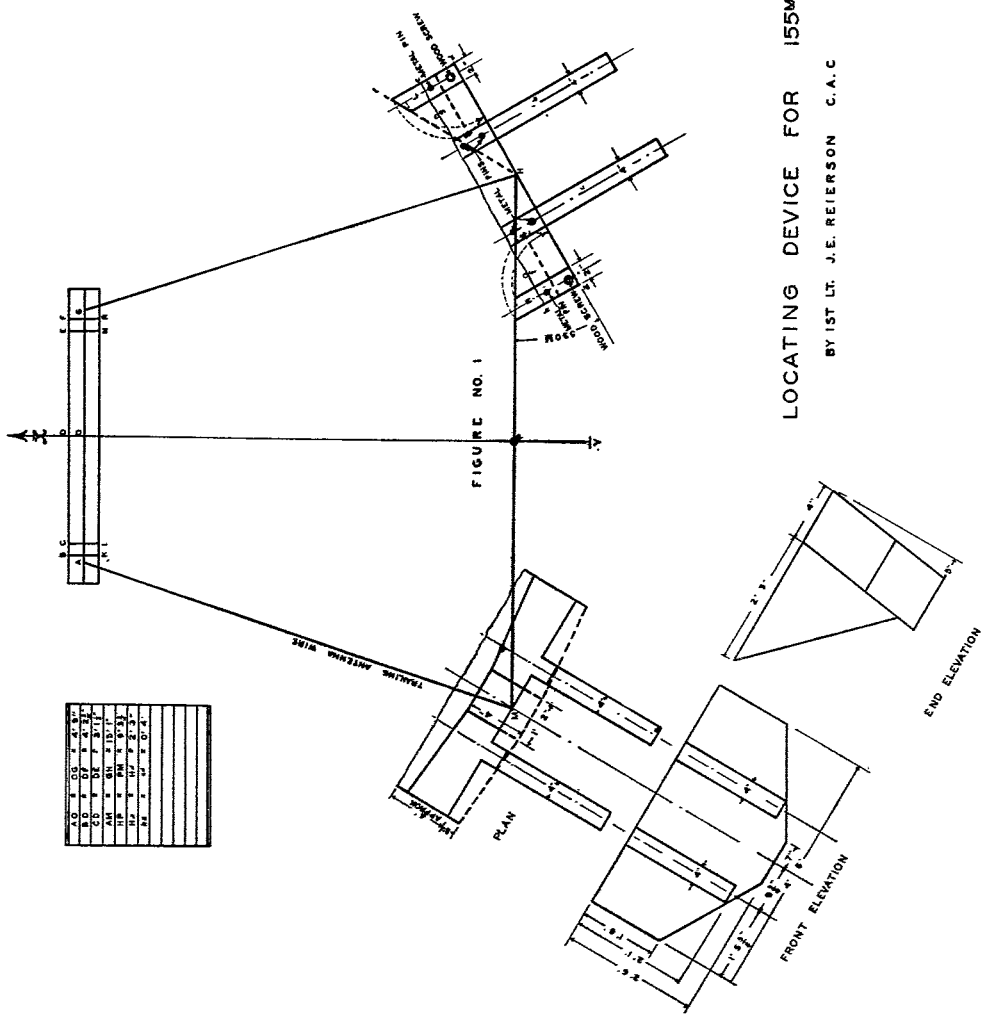
### **A Method of Emplacing the 155-mm. Gun**

*By* 1ST LIEUT. J. E. REIERSON, C. A. C.

It has always appeared to the writer that there is too much time and labor wasted in determining the position and digging the spade trenches in the emplacing of the 155-mm. gun. There is generally too much soil dug away thereby giving less stability to the gun. In order that the position may be properly prepared with minimum time and labor prior to the arrival of the gun, a contrivance has been made as shown in figure below.

The coordinates of the position having been determined, the procedure in emplacing is to determine the line of direction of the midpoint of the field of fire. This line should be marked by means of a cord and stakes (see XY). The ground is now prepared for the gun platform as described in training regulations and the gun platform is laid perpendicular to the line XY. The plank on which the wheels rest is marked to show the position of the edges of the wheel shoes BK, CL, EM and FN, also the projection of the midpoint of each hub cap (see A and G). The latter points are holes in which metal pins are held. To these pins a wire with five soldered loops G, H, P, M and A is attached. The wires are stretched taut and the pins moved until the loop P is in the vertical projection of the line XY. The pins H and M now give us the midpoint of the spade supporting wall. To determine whether or not the ground at pins H and M is level, a level is placed lightly on the taut wire near one of the pins. The ground within a radius of three feet of the higher pin is smoothed off

10	8	05	4	8
20	7	07	4	8
30	6	09	4	8
40	5	11	4	8
50	4	13	4	8
60	3	15	4	8
70	2	17	4	8
80	1	19	4	8
90	0	21	4	8
100	0	23	4	8
110	0	25	4	8
120	0	27	4	8
130	0	29	4	8
140	0	31	4	8
150	0	33	4	8
160	0	35	4	8
170	0	37	4	8
180	0	39	4	8
190	0	41	4	8
200	0	43	4	8
210	0	45	4	8
220	0	47	4	8
230	0	49	4	8
240	0	51	4	8
250	0	53	4	8
260	0	55	4	8
270	0	57	4	8
280	0	59	4	8
290	0	61	4	8
300	0	63	4	8
310	0	65	4	8
320	0	67	4	8
330	0	69	4	8
340	0	71	4	8
350	0	73	4	8
360	0	75	4	8
370	0	77	4	8
380	0	79	4	8
390	0	81	4	8
400	0	83	4	8
410	0	85	4	8
420	0	87	4	8
430	0	89	4	8
440	0	91	4	8
450	0	93	4	8
460	0	95	4	8
470	0	97	4	8
480	0	99	4	8
490	0	101	4	8
500	0	103	4	8
510	0	105	4	8
520	0	107	4	8
530	0	109	4	8
540	0	111	4	8
550	0	113	4	8
560	0	115	4	8
570	0	117	4	8
580	0	119	4	8
590	0	121	4	8
600	0	123	4	8
610	0	125	4	8
620	0	127	4	8
630	0	129	4	8
640	0	131	4	8
650	0	133	4	8
660	0	135	4	8
670	0	137	4	8
680	0	139	4	8
690	0	141	4	8
700	0	143	4	8
710	0	145	4	8
720	0	147	4	8
730	0	149	4	8
740	0	151	4	8
750	0	153	4	8
760	0	155	4	8
770	0	157	4	8
780	0	159	4	8
790	0	161	4	8
800	0	163	4	8
810	0	165	4	8
820	0	167	4	8
830	0	169	4	8
840	0	171	4	8
850	0	173	4	8
860	0	175	4	8
870	0	177	4	8
880	0	179	4	8
890	0	181	4	8
900	0	183	4	8
910	0	185	4	8
920	0	187	4	8
930	0	189	4	8
940	0	191	4	8
950	0	193	4	8
960	0	195	4	8
970	0	197	4	8
980	0	199	4	8
990	0	201	4	8
1000	0	203	4	8



# LOCATING DEVICE FOR 155MM GUN

BY 1ST LT. J. E. REIERSON C. A. C

until the bubble is centered in the level (the latter pin is of course removed while the ground is being dug up). The pin is now placed through the screw eye H of the locating device shown in figure 2. The device is now rotated about this pin in such a way that the regulating arm R just touches the wire HM. Metal pins are now placed through the screw eyes at points f and g thus holding it in place for tracing. The lines ed, ah and the arms b and c are now traced on the ground with a metal pin. The device may now be removed from this pin and used on the other pin in the same manner. The regulating arm marked "R" is used on the right spade trenches and the one marked "L" on the left.

The tracings having been made the pins may now be removed. The line ad shows the position and length of the supporting wall for the spade. The lines b and c are the trenches for the spade braces. The depths and contours are shown in figure 1. A pick and narrow spade should be used in digging these trenches, so as to disturb as little ground as possible.

The gun is now maneuvered along the line of direction from front to rear (when possible) so that the edges of the wheel shoes coincide with the lines on the plank and so that the projections of the midpoint of the hub caps fall on the points A and G. The wheels are chocked, the equipment, seat and spades removed, the gun moved into battery and the limber removed. The spades having been placed in position the trails are swung outward, lowered and bolted to the spades. The trench in front of each spade is now filled in with stones and dirt, and the latter well tamped. The gun is now tested for level. If the gun is found to be out of level one trail is raised until the gun is level. If the plumb line is to the right of the lower groove in the face of the breech the right trail is raised, if to the left of the groove the left trail is raised. The trench in front of the spade which has been raised is again tamped and the jack removed.

The following drill allows the device to be assembled and the tracings made in less than two minutes:

1. Nos. 1 and 2 uncoil the wire.
2. Gun commander assembles device.
3. Nos. 1 and 2 place pins in loops at ends of wire and place pins in holes A and G respectively.
4. Nos. 1 and 2 place pins through loops M and H and keeping both wires taut move pins under the direction of the gun commander who places a pin through loop P into the ground when it is directly over line XY. (The pins at M and H are not pushed in the ground until the device is placed so that the screw eye at M or H is placed under the loop M or H.)
5. The gun commander moves the device so that the eye at H is under the pin and No. 2 pushes the pin in the ground.
6. The gun commander rotates the device until the arm "R" just touches the wire MH.



7. No. 2 pushes pins through eyes f and g to hold the device while gun commander traces arms b and c and lines ed, ah. The tracing having been done the pin at H is removed and the device is moved over to point M where steps 5 to 7 are repeated. The arm L is used on the left spade position.

### **Fast-Moving Target Again Ready for Test**

A number of Coast Artillery officers will be interested in the present status of the development of a fast-moving target for seacoast artillery practice. This project has been under consideration by the Coast Artillery Board for some time. Previous tests with several types of targets were inconclusive or resulted in disapproval of the design tested. Finally the cooperation of the Navy Department was sought and it offered its assistance in the development of a satisfactory fast-moving target. The target designed by the Navy is now ready for test at the Norfolk Navy Yard. The use of destroyer as towing vessel has been requested. The Coast Artillery Board will observe the test in the near future.

### **Coast Artillery Materiel**

The following extracts from the report of the Chief of Ordnance pertain to the development of Coast Artillery materiel by the Ordnance Department during the year ending June 30, 1930.

*Multiple Truck Mount for .50 Caliber Antiaircraft Machine Guns.* Two antiaircraft multiple machine gun truck mounts, designed to afford protection for marching troops, have been constructed and will be tested during the antiaircraft exercises to be held this fall. One mount is equipped with four caliber .50 machine guns and full automatic fire-control, including a director and height finder mounted on a firing platform which, in turn, is mounted on a truck, and is capable of being quickly leveled, both transversely and longitudinally. This mount represents the ultimate in mechanical equipment for accurate machine gun fire. The other mount is equipped with two caliber .50 machine guns and a stereoscopic sight by means of which the line of fire, as seen from tracers, can be directed to the target. The mount has been constructed principally by welding so as to insure minimum weight. A new automatic feed mechanism is provided, and each gun is equipped with an ammunition box capable of holding one thousand two hundred rounds in a continuous belt. This mount represents the simplest type of fire-control yet developed for a multiple mount.

*37-mm. Antiaircraft Mount.* A new 37-mm. antiaircraft mount has been designed and was tested during the 1930 antiaircraft exercises. The new mount is principally of welded construction, and embodies those features shown to be desirable and recommended as a result of the test of a previous model during the 1928 antiaircraft exercises. Two of the previous models will be modified to take the Sperry Data Receiver and,

with the new model, will constitute a three-gun battery for test during the 1930 antiaircraft exercises.

*Universal Carriages.* The Caliber Board outlines the requirement for a division carriage having all-around fire and a vertical arc of fire of from minus five degrees to plus eighty degrees. During the past year the Ordnance Department has designed and built two such carriages. The gun and recoil mechanisms for these carriages were taken from the 75-mm. gun carriage M1925 and modified, the gun having a counterweight added, and the recoil mechanism being provided with a variable recoil device. Both carriages have been given preliminary tests at Aberdeen Proving Ground; after certain modifications these tests will be completed, after which the carriages will be turned over for service test to the Field Artillery Board.

*Antiaircraft Artillery Materiel—Antiaircraft Guns, Mobile.* Six units of the latest model 3-inch mobile antiaircraft mount have been manufactured and issued to the service. Four of these units were tested during the 1929 antiaircraft exercises. The original design of these mounts contemplated the use of steel castings for important parts; but sound castings were difficult to obtain, and welded construction has been adopted. Welded carriages have been tested with satisfactory results. This type of construction makes for a lighter and stronger mount. Twelve units are now under manufacture using the welded type of construction. One set of outriggers, of welded construction, is under manufacture for test during the 1930 antiaircraft exercises. Outriggers, at present, are made up of aluminum alloy castings, which are both difficult to produce and expensive. Six 3-inch antiaircraft guns for these mounts have been manufactured and issued to the service. Twelve additional units are now under manufacture. This design permits of the use of interchangeable liners.

*Interchangeability of Liners.* The latest models of both the 3-inch mobile and the 3-inch fixed antiaircraft guns are now manufactured with sufficient clearance between liner and tube to secure interchangeability. Improvement in design has practically eliminated scoring of the exterior surface of the liner when removing it from the tube.

*Tractors.* The caterpillar "20" tractor completed its Ordnance Department and Service tests and, upon the recommendation of the chiefs of the interested and using services, was standardized by the War Department as the Light Artillery Tractor. The caterpillar "30" and "60" tractors were previously standardized. This action results in the completion of standardization of a line of commercial track-laying tractors. The two-ton tractor previously standardized was transferred to limited standard. Tests of representative commercial tractors were continued at Aberdeen Proving Ground, in order to keep the Department informed of new developments.

*Prime Movers—Antiaircraft Artillery.* Tests have been conducted to determine the suitability of several types and makes of trucks for use as prime movers for antiaircraft guns. There have also been under test with mobile antiaircraft regiments three six-wheeled, four-wheeled drive commercial prime movers. Results reported to date are satisfactory. The work was continued at the antiaircraft exercises.

*Self-Propelled Mounts—Antiaircraft Machine Guns.* An antiaircraft multiple machine gun truck was developed and delivered to the Proving Ground for test. The chassis of this vehicle is a six-wheeled, four-wheel drive commercial truck of about two tons capacity. Welded steel tracks to fit the tires of the four driving wheels have been developed for use when off the road. Preliminary tests at the Proving Ground indicate that this type of track will greatly increase the cross-country ability of this vehicle, if it is properly handled.

*Reducing Dangers of Blending Operations.* From studies made of the generation of charges of static electricity in the blending of smokeless powder it has been ascertained that when the relative humidity of the atmosphere is sixty per cent or more, the static charge accumulated by the powder is negligible. Studies are being made of the effects of lower degrees of humidity in order to determine the practicability of reducing the dangers of the blending operation by conducting this operation only when atmospheric conditions are within prescribed limits.

### **Report of Chief of Coast Artillery**

The report of the Chief of Coast Artillery for the fiscal year ending June 30, 1930, has been published. The following are listed as the outstanding activities of the Coast Artillery Corps for the year:

Reorganization of the Coast Artillery Corps, within the continental United States.

The training of all Coast Artillery units in the service of antiaircraft artillery as well as in the service of all fixed, railway, or tractor-drawn artillery to which they are normally assigned.

Experimental long range firing with the 16-inch guns and the development of a system of fire-control by aerial observation.

Joint Army and Navy exercises in the Philippine, Hawaiian, Panama Canal Departments, and in the Harbor Defenses of Puget Sound and Long Island Sound.

Joint Air Corps-Coast Artillery (Antiaircraft) exercises at Aberdeen Proving Ground.

Battle practices in the Philippine, Hawaiian and Panama Canal Departments.

Continued development of antiaircraft artillery materiel including guns, machine guns, searchlights and sound locators, the standardization of same, and issue to troops.

Continued development and improvement of seacoast artillery including fixed, railway and tractor-drawn guns.

Preparation of new Tables of Basic Allowances for the Coast Artillery Corps.

General Gulick calls attention to the constant and progressive improvement in gunnery and target practice throughout the Corps. The maintenance of speed and accuracy is ascribed to the competitive scoring system. A new Training Regulations, "Coast Artillery Target Practice," now in the hands of troops, is a great improvement over the previous regulations and will greatly simplify the preparation of target practice reports. The scoring system for antiaircraft firings have been completely revised. In their revision an effort was made to prevent attempts made to obtain a high score under conditions not probable in service. Due to limited fields of fire and the necessity for insistence on certain safety regulations it is almost impossible to fire under strictly service conditions but the new regulations are believed to be a great improvement over the old regulations in this respect.

General Gulick calls attention to the battle practices held in the Philippine, Panama and Hawaiian Departments and the Joint Army and Navy exercises conducted in these same departments and in the Harbor Defenses of Puget Sound and Long Island Sound. The value of these exercises in testing communications, intelligence systems, defense plans, and training methods is enormous. As a means of providing greater opportunity for improving cooperation between land and naval forces they are indispensable and should be continued.

The joint Antiaircraft-Air Corps exercises held at Aberdeen Proving Ground May 12-17, 1930, were the most pretentious ever undertaken in this country. They were carried out in a highly efficient and competent manner and furnished valuable data and information with respect to the organization and employment of the intelligence battery and antiaircraft artillery intelligence problems. Comments on these exercises appear in another section of the JOURNAL.

It is probable that the past year is a record year for the movement of Coast Artillery units. Many changes were necessitated by the reorganization which was directed early in January. The following résumé of these movements is furnished as an indication that the Coast Artillery, when necessary, can be as mobile as some of our other arms:

The 51st Coast Artillery (TD) moved from Fort Eustis to Fort Monroe. The 52nd Coast Artillery (Ry) also departed from Eustis—one battalion taking station at Fort Hancock, the 3rd Battalion going to Fort Monroe. The 61st Coast Artillery (AA) made a long march of twelve hundred and three miles from Fort Monroe to its new station at Fort Sheridan. The 62nd Coast Artillery (AA) made a march from Fort Totten to Aberdeen Proving Ground to participate in the joint Antiaircraft-Air Corps exer-

cises and returned to its old station upon their completion. The 63rd Coast Artillery (AA) also changed station from Fort Winfield Scott to Fort MacArthur, California. The 1st Sound Ranging Battery moved as a unit under its own motive power from Fort Eustis to Aberdeen where it was disbanded, its personnel becoming a part of the 69th Coast Artillery (AA). The 69th, organized at Aberdeen, at this writing, is about to begin a march of over one thousand miles to its new station at Fort McClellan.

At the Coast Artillery School gunnery courses, both antiaircraft and seacoast artillery, have been amplified. The Advanced, National Guard and Reserve officers classes were given an opportunity to witness a part of the firing tests at Aberdeen, the student officers manning the latest types of guns and instruments. The students also were taken to Eustis to witness firings from 8-inch railway guns and 12-inch railway mortars as well as the 155 guns. Hereafter these firings will be conducted at Fort Monroe due to the change in station of the units conducting these demonstrations. Students conducted adjustment problems with the 75-mm. battery and fired a seacoast practice with the 12-inch mortars. The above is sufficient indication that the subject of gunnery is being emphasized at the School and that the instruction given is not altogether theoretical.

The progress made in harbor defense fortification projects is not as great as is desired. The 1919 program for the modernization of our harbor defenses has languished after the expenditure of approximately thirty million dollars. An equal amount is needed to complete the project. The 1919 program was based upon an eight-year construction period for those fortifications in the United States, a two-year period for Panama, and three years for other insular departments. At the present time the overseas projects will be completed in 1933, if the same rate of progress is maintained, while the projects in the continental United States will not be completed for ten years. It should be borne in mind that this progress made depends upon appropriations available. Those made for the fiscal year ending June 30, 1931, were not encouraging to the early completion of the program.

# COAST ARTILLERY BOARD NOTES

*Communications relating to the development or improvement in methods or materiel for the Coast Artillery will be welcome from any members of the Corps or of the Service at Large. These communications, with models or drawings of devices proposed, may be sent direct to the Coast Artillery Board, Fort Monroe, Virginia, and will receive careful consideration. J. C. Ohnstad, Lieutenant Colonel, C. A. C., President.*

## Projects Completed During October

<i>No.</i>	<i>Title</i>	<i>Action Taken</i>
665	Source of Power Supply for EE-5 Telephones.	Completed October 20. Recommend that the type EE-5 telephone be not issued to Coast Artillery Units in lieu of telephone EE-5 with carrying case GE-39.
798	Test of Flash Message Switch for Use with Monocord Switchboard.	Completed October 16. Recommend that no further tests be given the Flash Message Switch designed by Capt. Clyde L. Walker.
799	Trajectory and Fuze Setter Charts for 3" AA Guns.	Completed October 4. Recommend that the publication of enlarged trajectory charts be discontinued; that small trajectory charts are all that are needed.

## Projects Under Consideration

<i>No.</i>	<i>Title</i>	<i>Action Taken</i>
681	Test of Fast Towing Target.	Tests will be conducted November 1, 3 and 4.
689	Special Seacoast Target Practice for Training of Aerial Observers.	Awaiting reports of practices.
694	Test of Erosion Charts.	Awaiting further tests.
701	Comments on Target Practice Reports.	Comments are submitted as reports are received.
707	Test of Artillery Lantern E-1 and Lantern Mask T-1.	Awaiting receipt of report of tests conducted by 62nd C. A.
727	Standard Single Conductor Mine System.	A continuing project.
764	Reminder List for Antiaircraft Artillery Target Practice.	Under study.
796	Test of Elevating Mechanics (T-4) for 12-inch Railway Mortar Carriage.	Awaiting report from Ordnance Department.
797	Test of Ordnance Tractor Caterpillar "30" M1.	Test to be conducted at Aberdeen Proving Ground during A. A. tests.
800	Test of Radio Direction Finders.	Under study.
801	Portable Terminal Center. Telephone Lines of Mobile Artillery.	Under study—awaiting reports from testing organization.
804	Test of Trailers (HMORS) for Fire Control Equipment of Tractor-Drawn Artillery.	Report in preparation.
806	Use of Glider Targets and Aircraft for Targets instead of Towed Targets for Antiaircraft Artillery.	Under study.
808	Antiaircraft Communications.	Under study.

# COAST ARTILLERY ORDERS

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- Col. Jay P. Hopkins, to home, and await retirement, December 31.
- Col. Harrison S. Kerrick, orders to appear before Army Retiring Board, Omaha, revoked.
- Col. George A. Nugent, 12th, Fort Monroe, to 11th, Fort H. G. Wright, November 1.
- Col. Allen D. Raymond, instructor, Org. Res., Topeka, Kansas, to Omaha, Neb., to Army Retiring Board for examination.
- Col. Marcellus G. Spinks, detailed in Inspector General's Dept., Washington, D. C., upon expiration of foreign service.
- Col. Robert E. Wyllie, retired, December 31.
- Lieut. Col. Henry T. Burgin, Office of Chief of Coast Artillery, Washington, D. C., to San Francisco, sailing New York, December 17.
- Lieut. Col. Mathew A. Cross, from instructor, Coast Artillery School, Fort Monroe, to 63rd, Fort MacArthur, Calif.
- Lieut. Col. Arthur L. Fuller, promoted colonel, October 1.
- Lieut. Col. Francis H. Lincoln, promoted colonel, October 1.
- Lieut. Col. James L. Long, promoted to colonel, September 1.
- Lieut. Col. R. I. McKenney, Org. Res., Providence, R. I., to 11th, Fort H. G. Wright, October 1.
- Lieut. Col. Edward P. Powers, promoted colonel, October 1.
- Lieut. Col. James F. Walker, retired from active service, October 13, on account of disability.
- Lieut. Col. Will Paul Watson, C. A.-Res., ordered to active duty, October 15. He will proceed from Hamilton, Ohio, to Aberdeen Proving Ground.
- Lieut. Col. William H. Wilson, promoted colonel, October 1.
- Maj. Joseph D. Brown, 6th, Fort Winfield Scott, to Panama, sailing San Francisco, October 23.
- Maj. Joseph F. Cottrell, to New York General Depot, Brooklyn, N. Y., instead of 8th, Fort Preble, Maine.
- Maj. Edward B. Dennis, from Org. Res., Columbus, Ohio, to 10th C. A., Fort Adams, R. I.
- Maj. Barrington L. Flanigen, to Air Corps Tactical School, Langley Field, September 8.
- Maj. Charles A. French, to Air Corps Tactical School, Langley Field, September 8.
- Maj. Royal K. Greene, promoted lieutenant colonel, October 1.
- Maj. Francis P. Hardaway, Org. Res., St. Louis, Mo., to Panama, sailing New York City, December 2.
- Maj. Edward L. Kelly, from 7th, Fort Hancock, to ROTC, Fordham, N. Y.
- Maj. Allen Kimberly, promoted lieutenant colonel, October 1.
- Maj. J. P. McCaskey, Jr., Org. Res., Harrisburg, Pa., to Providence, R. I., October 1.
- Maj. Reinold Melberg, to 3rd, Fort Stevens, Ore., instead of 14th, Fort Worden, Washington.
- Maj. William E. Shedd, Jr., to lieutenant colonel, October 1.
- Maj. John P. Smith, from 10th, Fort Adams, to 12th, Fort Monroe, November 10.
- Maj. Albert H. Warren, from Hawaii, to Org. Res., 5th Corps Area, Fort Hayes, Columbus, Ohio.

Capt. Aaron Bradshaw, Jr., instructor, New York N. G., to 62nd, Fort Totten.

Capt. George W. Dunn, Jr., 7th, Fort Hancock, to ROTC, A. and M. College, Mississippi.

Capt. Arthur L. Lavery, from student, Harvard University Law School, Cambridge, to Hawaii, sailing New York, February 17.

Capt. John T. Lewis, instructor, Coast Artillery School, Fort Monroe, to Coast Artillery Board, Fort Monroe, December 1.

Capt. R. W. McBride, 62nd, Fort Totten, to ROTC, University of Illinois, Urbana, Ill.

1st Lieut. Arnold D. Amoroso, from instructor, N. G., Providence, R. I., to Hawaii, sailing New York February 17.

1st Lieut. John C. Delaney, 3rd, Fort Stevens, to Panama, sailing San Francisco, December 13.

1st Lieut. John W. Dwyer, 52nd, Fort Monroe, to Hawaii, sailing New York, February 20.

1st Lieut. Escalus E. Elliott, to 12th, Fort Monroe, instead of to Hawaii.

1st Lieut. E. Carl Engelhart, from language student, Tokyo, Japan, to 12th, Fort Monroe, March 31.

1st Lieut. Porter T. Gregory, Paris, to 62nd, Fort Totten, October 1.

1st Lieut. Frederic L. Hayden, from Panama, to U. S. Military Academy, West Point.

1st Lieut. Herbert B. Kraft, to home and await retirement, October 31.

1st Lieut. H. E. Magnuson, Fort McDowell, to Hawaii, sailing San Francisco, November 20.

1st Lieut. John A. McComsey, sailing New York for Panama, October 23, instead of September 11.

1st Lieut. Clarence M. Mendenhall, Paris, to 62nd, Fort Totten, October 1.

1st Lieut. Glenn Newman, 52nd, Fort Hancock, to 7th, Fort Mott, November 22.

1st Lieut. Howard H. Newman, Jr., 63rd, Fort MacArthur, to Panama, sailing San Francisco, December 13.

1st Lieut. James F. Pichel, from 11th, Fort H. G. Wright, to 9th, Fort Banks, Mass.

1st Lieut. H. W. Smith, 6th, Fort Winfield Scott, to Fort McDowell, Calif.

1st Lieut. G. E. Waldo, retired on account of disability, September 30.

1st Lieut. Alan D. Whittaker, Jr., from Philippines to home, October 8, and await retirement.

1st Lieut. G. E. Young, 62nd, Fort Totten, to Panama, sailing New York, December 2.

1st Lieut. Nevins D. Young, 10th, Fort Rodman, to Panama, sailing New York, December 2.

2nd Lieut. Robert C. Broadhurst, to Fort Sheridan, sailing San Francisco, September 23, via New York City.

2nd Lieut. Edward A. Dodson, Air Corps, Kelly Field, to Hawaii, sailing San Francisco, February 5.

2nd Lieut. Robert T. Frederick, from 13th, Fort Barrancas, Fla., to Panama, sailing New York, January 8.

2nd Lieut. Edwin G. Griffith, from 13th, Fort Barrancas, to Panama, sailing New York, December 2.

2nd Lieut. Carl W. Holcomb, promoted 1st lieutenant, October 1.

2nd Lieut. Armand Hopkins, promoted 1st lieutenant, October 1.

2nd Lieut. John W. Huyssoon, promoted 1st lieutenant, October 1.

2nd Lieut. Paul A. Jaccard, 62nd, Fort Totten, to 9th, Fort Warren.



2nd Lieut. Cyril H. McGuire, to 13th, Fort Barrancas, upon completion of foreign service.

2nd Lieut. W. F. McKee, Fort Sam Houston, to Panama, sailing New York, October 23.

2nd Lieut. Nathan A. McLamb, to 13th, Fort Barrancas, upon completion of foreign service.

2nd Lieut. William L. McNamee, from Hawaii, to 63rd, Fort MacArthur.

2nd Lieut. Paul B. Nelson, from Hawaii, to 6th, Fort Winfield Scott.

2nd Lieut. K. E. Rasmussen, 62nd, to the Philippines, sailing San Francisco, November 19.

2nd Lieut. Montgomery B. Raymond, is granted leave of absence for three months, to take effect December 12.

2nd Lieut. John A. Sawyer, from Philippines, to 11th, Fort H. G. Wright.

2nd Lieut. Lawrence E. Shaw, from Hawaii, to 6th, Fort Winfield Scott.

2nd Lieut. William F. Steer, promoted 1st lieutenant, October 1.

Master Sgt. E. E. Feehley, 7th, retired, September 30.

Master Sgt. Carl Mortenson, 9th, retired, October 31.

1st Sgt. Lafayette F. Decker, 14th, retired, Fort Worden, September 30.

1st Sgt. John C. Mullane, 69th, Aberdeen Proving Ground, retired, October 31.

1st Sgt. G. S. Painter, 60th, retired, September 30.

1st Sgt. David J. Reardon, 63rd, Fort MacArthur, retired, October 31.

Tech. Sgt. Michael J. Buckley, 6th, retired, Fort Winfield Scott, September 30.

# YOU TELL EM

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## Ye Ryme of Ye Tyme-Raynge Boarde

By MAJ. FRED M. GREEN, C. A. C.

(With usual apologies to T. Coleridge)

**AUTHOR'S NOTE:** *Seacoast gun batteries formerly plotted at fifteen-second intervals. No predictions were made on the plotting board; the correction for range-change during the time of flight was computed on the Pratt range board, and combined with the ballistic correction.*

*In 1913 it was required that set-forward points be plotted on the plotting board, a graphic time-range relation be maintained on a blackboard at one side of the emplacement, and a T-square and a stop watch be used to determine the proper corrected range for the instant of fire. At the command "Trip," this range was predicted a suitable number of seconds.*

*These requirements were heartily disliked by most officers. Under this system the inherent errors of prediction were made manifest, and the system was unjustly blamed for their existence. The emplacement pattern of time-range board was difficult to operate, and many delays and personnel errors resulted from its use. Also, the earliest boards were built without any protection from rain, and became inoperative in wet weather due to blurring of the chalk lines and figures.*

*To penalize unnecessary exposure of the piece to hostile observation and fire, a percentage deduction was made from the final figure of merit for each second the piece remained in battery after the lapse of a maximum allowable period—say ten seconds. I cannot now guarantee the accuracy of these figures but I can vouch for the possibility of the result indicated below.*

*Each practice was supervised by an umpire detailed for that purpose.*

### Argumente

A soldiere ben mournyng  
by ye sea-beache,

and seizeth another, a pass-  
yng soldiere, to whom hee  
purposeth to relayte hys  
tayle.

Ye bye-passer pleadeth a  
previous engagement,

but cannot escaype

### Fytte Ye Fyrst

Upon ye seashore, sadde and graye—  
Upon ye sandburred strande—  
There stood a dismalle soldiere  
With a peece of chalke in hande.

This saddened, weary cosmoline,  
Hee hove a mournfulle sighe  
And reachyng oute a skinnie clawe  
Y-grabbed a passer-bye.

Ye passer-bye he waxed fulle wode;  
"Holde offe your hande," quoted hee,  
"By thy oily, greasy denim pants  
Now wherefore stopp'st thou me?"

"First call hath sounded for parade—  
I've just changed into blue;  
I wot I needs must runne lyke hel—  
Do you not stande it too?"

Hee holds hym with hys greasy hand:  
"Our batterye fyred—" quothe hee;  
"Hands offe—leggoe my dresse-coate sleeve,"  
Eftsoons hys hande drops hee.

and so runneth an absence.

Ye aged cosmoline commenced his recital,

noteth ye tyme-raynge board, and showeth ye confusion engendered thereby,

and ye difficulties of interpolation, to which ye operator succumbed.

He showeth further howe hys valiant captaine, doubtless a wiley manne in ye wayes of warre, avoideth ye need for interpolatyng.

He relaytheth how ye raynge section laboured lugubriouslie

and were dyscomfytte by ye requirement of predycation when ye course was sinuous,

and of ye lamentable resgestae of ye plotter atte this circumstance,

and how he was again baffled by each chaynge in course of ye shyppe.

Hee holds hym with hys glyttering eye—  
Hys vyctym must stande stille,  
While loe! assemble for parade  
Ryngs clearlie from ye hille.

“Ye targette spedd acrossse ye baye—  
Ye Umpyre hee was there,  
Oure survisse practys for to see,  
To judge juste whatte was fayre.

“Our captaine gayzed with deepe dysguste  
Upon ye tyme-raynge boarde;  
Ye wyghte who posted raynges there  
Showed playnely hee wasy floed.

“Ye curve ranne uppe—ye curve ranne down—  
Ye curve ranne all arounde—  
Ye raynge-boarde manne he beete hys bresste  
And rolled upon ye grownde.

“Our captaine was a hardy soul:  
Quothe hee, ‘Now what ye hel?  
’Goddame these syllie lynes of chalke—  
We’ll fyre on ye bel!’

#### *Fytte Ye Second*

“Alofte, behynde ye batterie,  
Ye gunne-shye braine-squadde satte—  
They soughte to trakke ye targette  
And to gesse where itte was atte;

“And when they could locayte ye thyng—  
Ye orderes they were strykt—  
Ye plotter cryed, ‘Now cleare awaye,  
I’m going to predykt!’

“But when hee studied o’er yts trak  
Hee thoughte itte was bewytched;  
Loudlie hee rayved, and cursed, and swore,  
And eke he sonofabytched.

“At lengthe ye course was straytened out—  
Its wriggles he was learnyng—  
Anon cryed one from uppe above,  
‘Ye goddamdtargette’s turnyng!’

*Argumente*

And how sorrows multy-  
plied,

and how ye captaine, doubt-  
less constrayned by ye cur-  
nell and other senylle war-  
riors,

was dryven to extreame  
measures; and how, just as  
ye gunne ben y-tripped  
into batterye,

ye whole system ben typed  
uppe by failure of ye tyme-  
raynge board,

thus leavyng ye gunne in  
batterye without data, so yt  
ye penaltie runneth.

Yet further delays are  
caused by a chanse shower  
of rayne, thus makyng ye  
board alle

wette in every sense, and ye  
practysse is irretrievably  
ruined before a syngel  
shotte

ben fyred.

Despyte all interruption, ye  
cosmoline will shryve hym-  
self, for yt hee ben fulle

to bustynn of griffe and wo.  
He recounteth ye hardd-  
shyppes and pryvations in-  
separable

*Fytte Ye Thurd*

"Anon upon ye tyme-raynge boarde  
. Wee see a course once more,  
But—marke how yon deflekshuns jump  
Ffrom two-pointe-fyve to foure!

"Ye afternoone is wayning faste,  
Ye captaine he is tiring—  
'Oh, damme ye data!' loude he yelles:  
'Attention! Commence fyingr!'

"Ye shell was seeted from ye trukke,  
Ye powdurr home was rammed,  
Ye breache was closed, ye peece was trypped—  
And *then* ye T-square jammed!

"Ye stoppe-watche stopt! He can't predyct!  
When dyd ye laste bel ryng?  
Ye T-square's stucke—he droppes hys chalke—  
'To hel with thys damthyngel!'

"Above ye lofty parapet  
Ye muzzel comes in syghte;  
Above yon parapet it stays  
'Tyll raynges shalle come ryghte.

"Yet lo! upon yt fatalle boarde  
Straynge characters appeare:  
A 'reeding loste,' 'corrected raynge';  
Ye chalke begins to smeare

"As rayne-droppes smalle runne down ye walle—  
And also down our lynes—  
Ye figewers blurre upon ye arme—  
We can't telle sevens from nynes—

"So consequentlie we have loste,  
Before our fyrste shotte wente,  
All of our figewer of meryt  
With a penaltie hundred purrsente!"

*Fytte Ye Forth and Lasste*

"Passe in review"—parade is o'er—  
Ye menn will soone bee inne;  
"Stande faste," commandes yt cosmoline,  
"I muste confesse my sinne!

"For yeares I've patientlie endured  
A gun-mount weirde and straynge;  
"I've used all sortes of godamwayes  
Ffor ffyndyng outee ye raynge;

from mylittery servisse,  
and ye shocke to hys fyn-  
nickyng sensiblylities atte  
seeing

a Model 1912 belte over a  
blew unyforme.

And how ye patiente sol-  
diere

finally loste his patience

over ye tyme-raynge boards,

and dyd scoffe and flear  
vilaynously thereatte.

He showeth hys erudition  
by quoting ye equation of  
an inclyned straighte lyne

not passing through ye  
orygen, as set forthe in  
divers Godlye workes on  
Analytique Goemetrie.

He philosophyses bytterlye,  
and, despayrynge of bettyre  
thynges, consyderethe putt-  
ing inne

for a transfer to ye doughs,  
as dyd many a poore wyte  
in that sadde tyme.

"I've cutte ye grasse; I've trymmed ye sodde;  
I've shyned electryk lytes;  
I've taken visitors 'round, begodde,  
And showed them all ye syghtes;

"Wyth gaudie full dresse unyforme  
Of scarlet, golde, and blew,  
I've worn a woven pea-greene belte  
Of an appalling hue;

"I've peeled ye spuds; I've scrubbed ye floore;  
I've gladlie shyned my gunne;  
I've dusted oute behinde ye doore;  
I've ryssen ere ye sunne;

"Alle these—and more—have I endured  
Wythoute a syngle growle,  
But of contentement I am cured—  
I'm going to make Rome howle!

"I'm damned if I will goe to warre,  
And joyne in battle's hel,  
Armed with some chalke, some cotton wayste,  
And a nickel-playted bel!

"Itte makes me sore to drille with them—  
Itte fylls my pants with payne  
To thnyke how chalke-lyne sistems fayle  
If it should chause to rayne.

"And when I fayce my maker  
And the Perly Gaytes I see,  
I wante some better laste wordes than,  
'y is mx plus b';

"Predyction is uncertaine  
In thys worlde, I always fynde;  
Perhaps they'll sayle in a strait lyne—  
Perhaps they ain't that kynde.

"A T-square's not my weapon,  
And a doughboy bunch I'll fynde;  
Insteade of chalke lynes, I prefer  
Ye good olde skyrmishe lyne

"Where they don't fyte with erasers  
And a little tynklyng bel;  
May ye deville snatche Erasmus' boarde  
And burne it uppe in hel!"



Fig. 1—Crimping Operation

## The Crimp of a Shotshell

THERE are two main types of crimp applied to shotshells—one square, the other rounded. The round crimp is in more general use in this country. The crimp is applied by a rapidly rotating die that turns the mouth of the shell over as it is forced into the die. Figure 1 shows the apparatus used at Brandywine Laboratory to crimp the shells loaded for proof tests of smokeless shotgun powders.

The crimping of the mouth of a paper shell not only holds the wads and shot in place, but controls to a great extent the uniformity of performance of the cartridge. It should be understood that the turning over of the paper shell during the crimping is a deforming operation and that while the fibres of the paper tube are weakened by being creased, the double thickness gives the turnover its strength. When a crimp is too long it is weak and will open out to under pressure. Too short a crimp is likewise weak, as it has not been bent over sufficiently to support itself. It can thus be seen that each shell should

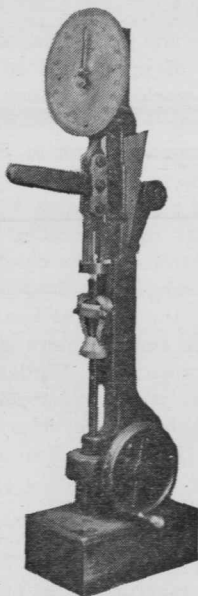


Fig. 2—Crimp Testing Apparatus

have the same normal length of crimp to avoid irregularities in shooting.

To test the uniformity of crimp, the machine illustrated in Figure 2 is used at Brandywine Laboratory. The shell is cut in half and the front end emptied. The top shot wad is removed and replaced by a plunger which fits under the crimp. The lower part of the shell is gripped by claws. As the wheel on the side of the machine is turned, the plunger pulls the crimp loose and the strength of pull is registered on the scale. As long as any given number of shells show but very little variation in crimp strength, assurance is provided that loading conditions are uniform.

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## Smokeless Shotgun Powders

For information on Target Shooting, write to National Rifle Ass'n, Barr Bldg., Washington, D. C.

# BOOK REVIEWS

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*Wild Men of the Wild West.* By Edwin L. Sabin: New York. Thomas Y. Crowell Co. 6" x 9". 363 pp. \$2.50.

Every phase in the development of this country has been characterized by the material out of which adventure and romance are woven, but no part of our history presents so much of the adventure that thrills and the romance that appeals as the taming of the West.

For years Edwin L. Sabin has made a serious study of the history of the pioneer West, and has to his credit a long list of books for boys dealing with frontier life. In his latest book, which has the arresting title of "Wild Men of the Wild West," Mr. Sabin has given a series of brief but vivid biographies of men and women whose adventurous careers stand out against the picturesque background of the early West.

The book is comprehensive in its scope and begins back of the wild West of the Overland Trail—back on that first frontier, the Kentucky and Tennessee wilderness, when Micajah Harp and Wiley Harp terrorized the lonely trails of the Ohio valley and Samuel Mason was chief of the bandits of the Natchez Trace; when the river pirates took their toll of life and property on the great water trail from Pittsburgh to New Orleans and Jean Lafitte was pirate king of the Gulf.

With the discovery of gold in California the frontier moved to the Pacific, and Joaquin Murieta, Juan Soto, Tom Bell, Tiburcio Vasquez and others killed and plundered until law-abiding citizens organized the Vigilantes to protect themselves against these desperadoes.

When the gold camps of Nevada, Montana, and Idaho came into existence the bad man extended his field of operations to the Rocky Mountain region. "The lust for gold swayed this world, and every man had to protect his own life and property. Laden with treasure the stages lumbered between Virginia City and Bannock, seventy miles or more, and on to Salt Lake, four hundred miles further. They were as tempting prizes as ever challenged the freebooters of the Spanish Main, and the road-agent pirates thrived as never before." Mr. Sabin gives a picturesque account of the "quiet Henry Plummer," who, while holding the office of sheriff of Bannock, was chief of the road agents; he tells of Jack Slade of the Overland, who "was feared a great deal more than the Almighty"; and he writes of Billy the Kid, the bad man of New Mexico.

As conditions on the frontier became more stable, law and order marched close upon the heels of the gunmen; the Vigilantes gave way to that hardy breed of frontier sheriffs who were the wonder and the admiration of the West. Mr. Sabin has given tabloid biographies of two of the most famous of these upholders of the law—Wild Bill Hickok of Kansas and Sheriff Pat Garrett of Santa Fe, both of whom died by the gun. "To spread the fear of a gun is to invite the gun in the grip of a fearing man."

The Wild Women are not overlooked in Mr. Sabin's account of the lawless days of the frontier, for a chapter is given to such picturesque characters as Virginia Slade, The Rose of Cimmaron, Belle Starr and Calamity Jane; while the book closes with a rapid-fire account of a few of the best known of the Indian outlaws, particularly Mangas Colorados, Satank and Satanta.

These characters "who figured in the Wild West of lawlessness and law have played their part and are gone. Some were brave with the instinctive

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courage of animals; some were brave with the thinking courage of men; but none was necessarily a brave man because he was a bad man."

"Wild Men of the Wild West" is a very readable book, and while it will appeal perhaps more to the boy who loves adventure, mature readers will also find it most interesting. Mr. Sabin is careful not to paint the outlaw in such colors as to make him a hero; he never lets the reader forget the fact that the gunman, by his law breaking, always brought about his own downfall, and that in the end the law must triumph.—E. L. B.

*The Christian's Alternative to War.* By Leyton Richards. New York: The Macmillan Co. 1929. 5" x 7½". 157 pp. \$1.50.

It is no uncommon thing to find people with fixed ideas on some subject who will eagerly read books written by one of their own faith but who never look inside the covers of an opponent's work. This is contrary to reason, it is the adversary's book which should be studied in order that his arguments and viewpoint can be obtained and thus the reader will be better prepared to combat them. It is with this idea that Mr. Richards' book should be read by all who believe in national defense.

The author is an Englishman and his work is an able presentation of the pacifist doctrine. Able, because the illustrations he gives are apt, his case is well prepared, his arguments are telling and he has no bitterness towards his opponents. The book is entirely free from the acrimony too often displayed on both sides of this highly controversial subject, so it is a relief to read a work which acknowledges that the proponent of national defense can be just as sincere as the one who agrees with the author. "We must take both sides at their best and not at their worst. It ought to be possible to recognize the conscience of the fighter and his devotion to what he deems to be right, while at the same time we dissent from his judgment." Would that all authors were imbued with a similar spirit.

In like manner any fair-minded man should be able to read Mr. Richards' book without accusing him of unworthy motives, or of doubting his devotion to his native country. There can be no question regarding his sincerity and high-mindedness.

The author wisely refrains from attempting to answer such questions as "What would Jesus do?" as arguments both pro and con can always be quoted from Holy Writ and the answer will necessarily conform to the conscience and opinion of the speaker, there being no other way of settling it.

He lays great stress on the horrible nature of the next war due to the wonderful improvements which have been made in death-dealing weapons in the last ten years. This may appeal to the layman, but military men will recognize them as being the views of enthusiasts for some particular arm or weapon and therefore subject to a heavy discount. Furthermore, military men know that the last war was horrible enough; it is not necessary to conjure up new terrors as arguments for peace, so no further notice need be taken of that portion of the book.

Mr. Richards confounds individuals with nations. He speaks disparagingly of the parallel so often drawn between armies and police forces. The latter, he says, have a redemptive quality, their objective being to redeem the individual, although he admits that such redemption frequently exists in theory only. But an army, he says, does not redeem the enemy, it exists only to destroy. The "enemy" is the nation we are fighting and the objective is the redemption of that nation according to our viewpoint. We destroy their armies

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in order to achieve that result, but we do not destroy the nation, and if some peace treaties have had that effect it is simply another illustration of human fallibility, just as the police force does not always redeem the individual.

Similarly he speaks of the futility of war as a defensive measure because "thirteen million civilians died in the Great War by violence or starvation." He fails to perceive that defense of the nation, not of the individual, is the objective. In 1776 the colonists fought in their own defense. Not one of the individuals who died then could have lived to this day, but the nation was preserved and we are the benefactors of that war. It certainly accomplished our defense. So will future generations of Americans, English, French, etc., benefit by the losses incurred between 1914 and 1918.

Inasmuch as war does not protect the individual, Mr. Richards concludes that it is a failure and the Christian way is to refuse to fight, no matter what may be the cause of the trouble a recourse to arms is never justified to the truly Christian mind. There can be no war if the men on one or both sides refuse to turn out for it. "Such refusal may expose the objector to persecution, or in the last resort to martyrdom, but such martyrdom, especially if an entire community were involved in it, would inevitably stir the conscience of mankind and mark the beginning of the end of war."

Mr. Richards might consider the cases of Belgian and Luxemburg in the late war. Luxemburg anticipated him and refused to fight, but there is no evidence that such action has had any effect on the termination of war. True, it was hardly a martyr nation, but it would have been had not Belgium taken the opposite course and by delaying the Germans enabled the Allies ultimately to gain the victory and restore Luxemburg to the list of nations. The individual Luxemburgers were "defended" by inaction, while hundreds of thousands of Belgians perished in a cause, the objectives of which meet with Mr. Richards' approval. Which of the two contributed the most for the benefit of the world and of succeeding generations? Or for the advancement of the cause of peace? It would be interesting to hear Mr. Richards on this point.

Make no mistake, this book will make many converts to pacifism; it therefore behooves all believers in national defense to study it carefully so as to be prepared to answer it in the judicial, unprejudiced spirit of the book itself.—R. E. W.

*Laud. Storm Center of Stuart England.* By Robert P. T. Coffin. Brentano's. 1930. 6" x 9". 324 pp. 13 ill.

Notwithstanding the flood of biographies which have appeared in the last few years, there are but few which have the charm and delight shown on every page of this work by Mr. Coffin. The principal characters are portrayed in an interesting and sympathetic manner; the part they played in the evolution of the English-speaking race is admirably set forth and the literary merit is beyond reproach. Altogether it is a most delightful and instructive work.

Mr. Coffin has chosen for his subject a man against whose head has been directed some of the severest criticisms of history; a man hated by his contemporaries; despised by subsequent generations, yet, withal, one who helped to mould, for good, the character of the English down to the present time. And not only the English, but Americans also have profited by his works. In the history of the Reformation in England we read much of Henry VIII, Cranmer, Somerset, and Elizabeth, but Mr. Coffin claims that Archbishop Laud was the real founder of the Anglican Church, the great product of that Reformation, and therefore of the Protestant Episcopal Church of America. Laud was a High Churchman, so much so that in his day he was accused of "Popery,"

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but that was the time of the Puritans, those religious enthusiasts who believed that all pleasure was sinful. The swing of the pendulum had carried the country that far from its old habits when it was known as "Merrie England." Laud, though he perished for the cause, was a prime mover in reestablishing a normal English life.

Oxford is another monument of the great Archbishop. Supreme as an organizer, Laud, when Chancellor of the University, codified the ancient rules, and evolved "a set of statutes which, however they have been revised and over-written during three hundred years, are the breath of life of the corporate being of Oxford University to this day. He found an ancient system of pedagogy; he left the germ of most modern institutions of learning, at least among the English-Saxon nations, of the present time." Here again we find America's debt to the noted cleric.

Another most remarkable of Laud's personal characteristics was his belief in dreams and visions. His diary is full of his dreams, how he remembered them long enough to record them is a mystery, and the number that were fulfilled is enough to cause the thoughtful reader to ponder on the possibilities of this form of prophecy.

Next to Laud the character most discussed by our author is his arch-enemy the "crop-eared Presbyterian," William Prynne, "the kind of man people have in mind when they think of virtue or a gloomy business."

Prynne was a prolific writer, his poems are in any English anthology, but his prose has virtually disappeared, although "Health's sickness" might well be resurrected by a fanatic prohibitionist as it is "a discourse proving the drinking of healths to be sinful."

Another brochure was aimed at the long hair of Cavaliers, this was "a discourse proving the wearing of a lock to be unseemly." Long locks were "badges of infamy, effeminacy, vanity, singularity, pride, lasciviousness and shame in the eyes of God. Yea, they are unnatural, sinful and unlawful ornaments, etc." Such a man was William Prynne, "half a universe away from William Laud." Prynne was a power among the Puritans and eventually Laud's downfall and execution was directly attributable to that Psalm-singing poet.

Prynne has followers still, but the influence of Laud is undoubtedly greater than that of his Nemesis.

Of Charles I and the Earl of Strafford, the other two members of the triumvirate which brought on the Civil War, our author says but little, only enough to fit them into their proper places in the story. Laud was the strongest character of the three, and the one who received the greatest vituperation. All three died at the executioner's block in order to prove that the English people would not submit to an absolute monarch. Yet some of their works have lived and are part and parcel of the present English-speaking race.

The illustrations are all from old prints and paintings and are a valuable addition to the book.

No one can err in reading this delightful book.—R. E. W.